

JAN 86422

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SEARCH REQUEST FORM

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Requester's Full Name: R GITOMER Examiner #: 69630 Date: 2/11/02
 Art Unit: 1651 Phone Number: 308-0732 Serial Number: 09/626, 566
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Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

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FILE LAST UPDATED: 14 Feb 2003 (20030214/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

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L61 ANSWER 1 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 2003:20978 HCAPLUS

DN 138:86124

TI Acridinium ester labels having hydrophilic modifiers

IN **Natrajan, Anand; Sharpe, David; Jiang, Qingping**

PA **Bayer Corporation, USA**

SO Eur. Pat. Appl., 28 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM G01N033-58

ICS G01N033-82

CC 9-14 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1273917	A2	20030108	EP 2002-13902	20020621
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRAI US 2001-898381 A 20010703

AB The present invention is generally directed to detectable **chemiluminescent** acridinium ester labels having hydrophilic modifiers; to compns., complexes and/or conjugates which include such labels; and to processes for performing bioanal. assays for target analytes which use such labels. Assays for folate, theophylline, and tobramycin (using such labels with hydrophilic modifiers such as nonionic polyethylene glycol and polyionic spermine disulfonate and polyionic spermine dicarboxylate) are described in detail.

ST acridinium ester label hydrophilic prepn folic acid theophylline **chemiluminescence**

IT Hydrophilicity

Labels

Luminescence, chemiluminescence

(acridinium ester labels having hydrophilic modifiers)

IT Polyoxyalkylenes, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(acridinium ester labels having hydrophilic modifiers)
IT Onium compounds
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(acridinium, esters; acridinium ester labels having hydrophilic modifiers)
IT Bond
(covalent; acridinium ester labels having hydrophilic modifiers)
IT 482648-38-4P
RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(NSP-DMAE-HD-PTEROATE; acridinium ester labels having hydrophilic modifiers)
IT 194357-76-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSP-DMAE-HD; acridinium ester labels having hydrophilic modifiers)
IT 482648-37-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(SPDC; acridinium ester labels having hydrophilic modifiers)
IT 482648-36-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(SPDS; acridinium ester labels having hydrophilic modifiers)
IT 58-55-9, Theophylline, analysis 59-30-3, Folic acid, analysis 32986-56-4, Tobramycin
RL: ANT (Analyte); ANST (Analytical study)
(acridinium ester labels having hydrophilic modifiers)
IT 482648-41-9P
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(acridinium ester labels having hydrophilic modifiers)
IT 482648-46-4P 482648-48-6P 482648-49-7P 482648-50-0P 482648-51-1P 482648-52-2P 482648-53-3P 482648-54-4P 482648-56-6P 482648-57-7P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(acridinium ester labels having hydrophilic modifiers)
IT 25322-68-3, Polyethylene glycol 194357-64-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(acridinium ester labels having hydrophilic modifiers)
IT 72236-26-1P 109789-40-4P 356046-26-9P 482648-39-5P 482648-44-2P 482648-55-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(acridinium ester labels having hydrophilic modifiers)

L61 ANSWER 2 OF 23 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:936052 HCAPLUS
DN 136:50658
TI Immunosorbent assay using branched bis-biotin/avidin/multiple label **complex** as a detection reagent
IN Aristarkhov, Alexander; Palmer, Michelle A. J.
PA USA
SO U.S. Pat. Appl. Publ., 11 pp., Cont.-on-part of U. S. Ser. No. 540,496, abandoned.
CODEN: USXXCO
DT Patent
LA English
IC ICM C12Q001-68
ICS G01N033-53
NCL 435006000

CC 9-10 (Biochemical Methods)

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001055766	A1	20011227	US 2001-802902	20010312 <--
PRAI	US 1999-127480P	P	19990402	<--	
	US 1999-169618P	P	19991208		
	US 2000-540496	B2	20000331		
AB	The present invention relates to a branched bis-biotin/avidin/multiple label complex that is conjugated to a member of a specific binding pair ("sbp member"). The complex and conjugate compns. of the invention find use in an assay for an analyte wherein there is employed a reagent system comprising an avidin reagent and a biotin reagent. The present invention comprises using as the biotin reagent the branched bis-biotin/avidin/multiple label complex as described above. Also disclosed are kits comprising the present bis-biotin/avidin/multiple label complex and methods of prepg. a bis-biotin/avidin/multiple label complex conjugate of a member of a specific binding pair ("sbp member") for use in a specific binding assay.				
ST	immunosorbent assay branched biotin avidin label complex detection reagent				
IT	Cell Chemiluminescent substances Composition Conjugation (molecular association) Fluorescent substances Isotope indicators Labels Light-sensitive materials Mixtures Test kits (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	DNA RL: ANT (Analyte); ANST (Analytical study) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Antibodies RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Antigens RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Avidins RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Enzymes, uses RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Haptens RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Monomers RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (immunosorbent assay using branched bis-biotin/avidin/multiple label complex as a detection reagent)				
IT	Polynucleotides				

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (immunosorbent assay using branched bis-biotin/avidin/multiple label
complex as a detection reagent)

IT Reagents
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (immunosorbent assay using branched bis-biotin/avidin/multiple label
complex as a detection reagent)

IT Receptors
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (immunosorbent assay using branched bis-biotin/avidin/multiple label
complex as a detection reagent)

IT Immunoassay
 (immunosorbent assay; immunosorbent assay using branched
 bis-biotin/avidin/multiple label **complex** as a detection
 reagent)

IT 58-85-5, Biotin 9013-20-1, Streptavidin 35924-94-8, Bis-biotin
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (immunosorbent assay using branched bis-biotin/avidin/multiple label
complex as a detection reagent)

L61 ANSWER 3 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:598225 HCAPLUS

DN 135:191242

TI Nucleic acid amplification via quasi-autocatalytic replicase and
chemiluminescence detection for improved signal to noise ratio

IN Morello, Ann M.; Jiang, Qingping; Monahan, John E.; Law,
 Say-jong

PA Bayer Corp., USA

SO PCT Int. Appl., 61 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q001-68

CC 3-1 (Biochemical Genetics)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001059162	A2	20010816	WO 2001-US4244	20010208
	WO 2001059162	A3	20021205		
	W: JP				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	US 2002098485	A1	20020725	US 2001-781106	20010208

PRAI US 2000-180918P P 20000208

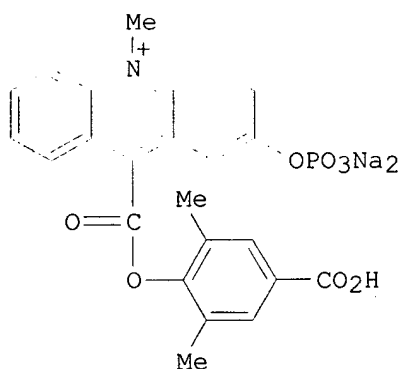
AB The present invention allows amplification of a target nucleic acid
 sequence by employing a quasi-autocatalytic replicase activity, while
 ensuring fidelity of amplification by use of a method for detecting the
 presence of the amplified target rather than the amplified replicase
 replicable sequence. Therefore an object of the invention is to provide a
 method for assaying a target nucleic acid comprising combining one or more
 amplification probes with a nucleic acid sample under conditions suitable
 for hybridization such that the amplification probe, or probes together if
 more than one probe is used, hybridize to the target sequence. Addnl.
 detection probes are provided by the invention for detg. the amt. of
 unhybridized replicase replicable sequence such that the signal to noise
 ratio (S/N) between the amplified target segments (signal) and amplified
 unhybridized probe sequence (noise) can be detd. to measure amplification
 fidelity. Kits for practicing the invention are also provided. Prepn. of
 longer emission acridinium ester N-hydroxy succinamide (LEAE-NHS) and
 dimethylacridinium esters (DMAE) detection probes is described. The solid
 phase capture probe, PMP-MA, was prepd. by immobilizing to paramagnetic
 particles (PMP) an oligonucleotide capture probe. Detection of LEAE and
 DMAE **chemiluminescent** emission signal by dual

- photomultiplier tube (PMT) luminometer is also described.
- ST nucleic acid amplification quasi autocatalysis replicase;
chemiluminescence nucleic acid detection signal noise ratio improvement
- IT Onium compounds
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(acridinium, esters; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Onium compounds
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(acridinium; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Onium compounds
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(isoquinolinium; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT **Chemiluminescent** substances
Luminescence, chemiluminescence
Luminescent substances
Nucleic acid amplification (method)
Nucleic acid hybridization
Test kits
(nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Particles
(paramagnetic, nucleic acid sequence coupled to; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Onium compounds
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(quinolinium; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT Photomultipliers
(tube, use in **chemiluminescence** detection; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT 521-31-3, Luminol 2315-97-1, Lucigenin 3682-14-2, Isoluminol
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT 9014-24-8, DNA-dependent RNA polymerase 9026-28-2, Q.beta. Replicase
RL: BUU (Biological use, unclassified); CAT (Catalyst use); BIOL (Biological study); USES (Uses)
(nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)
- IT 173249-70-2 173249-71-3 355882-51-8 355882-52-9, 4: PN: WO0159162
PAGE: 23 unclaimed DNA 355882-53-0, 5: PN: WO0159162 PAGE: 24 unclaimed DNA
RL: PRP (Properties)
(unclaimed nucleotide sequence; nucleic acid amplification via quasi-autocatalytic replicase and **chemiluminescence** detection for improved signal to noise ratio)

AN 2001:101348 HCAPLUS
 DN 134:159459
 TI **Chemiluminescent substrates of hydrolytic enzymes** such as phosphatases
 IN **Jiang, Qingping; Natrajan, Anand; Sharpe, David J.; Wong, Wen-jee; Law, Say-jong**
 PA **Bayer Corporation, USA**
 SO PCT Int. Appl., 156 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12Q001-42
 ICS C07D219-06
 CC 7-1 (**Enzymes**)
 Section cross-reference(s): 9, 27, 28

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001009372	A1	20010208	WO 2000-US20429	20000727 <--
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	EP 1203091	A1	20020508	EP 2000-950764	20000727 <--
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL			
PRAI	US 1999-146648P	P	19990730 <--		
	WO 2000-US20429	W	20000727		
OS	MARPAT 134:159459				
GI					



AB **Chemiluminescent substrates of hydrolytic enzymes** are disclosed having the general Formula **Lumi-M-P**, where **Lumi** is a **chemiluminescent** moiety capable of producing **light** (a) by itself, (b) with MP attached and (c) with **M** attached, wherein the different properties of **Lumi-M-P** and **Lumi-M** allow them to be distinguished. **Lumi** includes, but is not limited to, acridinium compds. (e.g. acridinium esters, carboxyamides,

thioesters, and oxime esters), reduced forms thereof (e.g. acridans), and spiroacridan compds. M is selected from oxygen, nitrogen and sulfur. P is a group that can be readily removed by **hydrolytic enzymes** to give Lumi-M and P. The **hydrolytic enzyme** can be phosphatase, glycosidase, peptidase, protease, esterase, sulfatase, and guanidinobenzoatase. Thus, 2-Phos-DMAE (I) is synthesized and shown to be an excellent **substrate** of **hydrolytic alk. phosphatase** to form 2-OH-DMAE. Both I and 2-OH-DMAE are **chemiluminescent**, but emit **light** at different emission maxima when they are treated with H₂O₂ in strong alk. soln. I emits a strong, visible blue **light** at .lambda.max 478 nm while 2-OH-DMAE emits a strong, visible orange **light** at .lambda.max 602 nm, thus resulting in a bathochromic shift of emission max. by 128 nm. One of the advantages in using **chemiluminescent acridinium substrates** like I to detect **hydrolytic enzymes** is that the products generated by the **enzyme** can be accumulated without undergoing significant decompn. during the **enzymic** reaction. In addn., under certain conditions the **chemiluminescence** from I is selectively and significantly suppressed, and thereby the overall signal differentiation of 2-OH-DMAE over I is improved. A heterogeneous immunoassay is also provided demonstrating I utility as a **substrate** for the **chemiluminescent** detection of TSH in human serum.

- ST **hydrolytic enzyme** assay **chemiluminescent substrate**; acridinium **chemiluminescent substrate**
hydrolytic enzyme assay; phosphatase assay
chemiluminescent acridinium substrate
- IT Immunoassay
 (TSH detection in human serum using acridinium **substrate** of alk. phosphatase; **chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)
- IT Onium compounds
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
 (acridinium; **chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)
- IT **Luminescence, chemiluminescence**
 (**chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)
- IT Onium compounds
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
 (isoquinolinium; **chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)
- IT Onium compounds
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
 (quinolinium; **chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)
- IT 9001-78-9 9001-92-7, Proteinase 9013-05-2, Phosphatase 9013-79-0, Esterase 9027-41-2, **Hydrolytic enzymes** 9031-96-3, Peptidase 9032-92-2, Glycosidase 9068-67-1, Sulfatase 84419-03-4, Guanidinobenzoatase
 RL: ANT (Analyte); ANST (Analytical study)
 (**chemiluminescent substrates** of **hydrolytic enzymes** such as phosphatases)

- IT 324762-34-7P 324762-52-9P 324762-55-2P 324762-58-5P
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 92-81-9DP, Acridan, compds. 229-87-8DP, Phenanthridine, compds. 260-94-6DP, Acridine, compds. 521-31-3DP, Luminol, compds. 2315-97-1DP, Lucigenin, compds. 3682-14-2DP, Isoluminol, compds. 12041-95-1DP, Benzacridine, compds.
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 324762-37-0P 324762-38-1P 324762-42-7P 324762-59-6P
RL: ARG (Analytical reagent use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 324762-35-8P 324762-40-5P 324762-43-8P 324762-44-9P 324762-46-1P 324762-48-3P 324762-49-4P 324762-50-7P 324762-54-1P 324762-56-3P
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 91-56-5, Isatin 100-39-0, Benzyl bromide 104-92-7, 4-Bromoanisole 106-41-2, 4-Bromophenol 123-31-9, Hydroquinone, reactions 540-38-5, 4-Iodophenol 1633-83-6, 1,4-Butanesultone 3970-21-6, Methoxyethoxymethyl chloride 5336-90-3, Acridine-9-carboxylic acid 6272-38-4, 2-(Benzyloxy)phenol 17789-14-9, 2-(3-Bromophenyl)-1,3-dioxolane 39755-95-8, 5-Methoxyisatin 115853-69-5 151490-52-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 6793-92-6P, 4-Benzyloxybromobenzene 108534-47-0P 112934-63-1P 130266-57-8P, 2-Methoxy-acridine-9-carboxylic acid 161006-15-1P 199190-18-6P 221057-35-8P 221057-36-9P 259169-12-5P 259169-13-6P 259169-43-2P 259169-44-3P 259169-45-4P 324762-60-9P 324762-61-0P 324762-62-1P 324762-63-2P 324762-64-3P 324762-65-4P 324762-66-5P 324762-67-6P 324762-69-8P 324762-70-1P 324762-71-2P 324762-72-3P 324762-74-5P 324762-75-6P 324762-76-7P 324762-77-8P 324762-79-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- IT 9002-71-5, TSH
RL: ANT (Analyte); ANST (Analytical study)
(detection in human serum using acridinium substrate of alk. phosphatase; chemiluminescent substrates of hydrolytic enzymes such as phosphatases)
- RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Akhavan-Tafti, H; US 5772926 A 1998 HCAPLUS
(2) Bayer Ag; WO 0009487 A 2000 HCAPLUS
(3) Corey, P; US 4810636 A 1989 HCAPLUS
(4) Renault, J; EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY - CHIMICA THERAPEUTICA 1981, V16(1), P24 HCAPLUS
(5) Say-Jong, L; US 4745181 A 1988 HCAPLUS
(6) Sotiriou-Leventis, O; US 5656426 A 1997 HCAPLUS

(7) Syntex Inc; WO 9402486 A 1994 HCAPLUS

L61 ANSWER 5 OF 23 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:368720 HCAPLUS
 DN 133:14303
 TI Measurement of hydride using **chemiluminescent** acridinium compounds
 IN **Sharpe, David; Natrajan, Anand; Jiang, Qingping; Parsons, George; Law, Say-jong**
 PA **Bayer Corp., USA**
 SO PCT Int. Appl., 64 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM G01N033-58
 ICS C12Q001-00; C12Q001-32; C07D219-04; C07D221-12; C07D215-50
 CC **9-5 (Biochemical Methods)**
 Section cross-reference(s): 1, 4, 7, 27, 79, 80
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2000031543	A1	20000602	WO 1999-IB1894	19991124	<--
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2319187	AA	20000602	CA 1999-2319187	19991124	<--
	BR 9907248	A	20001017	BR 1999-7248	19991124	<--
	EP 1049933	A1	20001108	EP 1999-972738	19991124	<--
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002530678	T2	20020917	JP 2000-584306	19991124	<--
PRAI	US 1998-109823P	P	19981125			<--
	WO 1999-IB1894	W	19991124			

OS MARPAT 133:14303

AB The present invention discloses a method for the measurement of hydride using a **chemiluminescent** compd., such as an acridinium compd. The source of hydride for the redn. of acridinium compd. may be of chem. or biochem. origin, or the result of **enzymic** catalysis. The chem. source of hydride, might be NaBH₄. A biochem. source of hydride might be that derived from NADH, or NADPH, while an **enzymic** source would be the class of oxidoreductases termed dehydrogenases which convert NADH or NADPH from NAD or NADP. Among applications for acridinium compds. as **chemiluminescent** indicators of hydride are diagnostic assays using dehydrogenases as reagents, indicators, diagnostic markers or as labels. Ethanol, for example, might be detected with acridinium ester **chemiluminescence** through the reaction of alc. dehydrogenase on ethanol, said reaction producing NADH. As a label, dehydrogenase might be used in an ELISA for the detection of a specific analyte with acridinium ester providing the signaling response. Acridinium compds. and conjugates were prepd. and used in assays for theophylline, ethanol, and other compds.

ST hydride **chemiluminescent** assay acridinium; **enzyme** assay hydride **chemiluminescent** acridinium; ELISA hydride **chemiluminescent** acridinium; theophylline assay hydride **chemiluminescent** acridinium; ethanol assay hydride **chemiluminescent** acridinium

IT Analytical apparatus

- (automated; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Biochemistry
(biochem. compds., hydride from; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Immunoassay
(**enzyme**-linked immunosorbent assay; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Immunoassay
(**enzyme**; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT **Enzymes**, uses
RL: ARG (Analytical reagent use); CAT (Catalyst use); ANST (Analytical study); USES (Uses)
(hydride from reaction catalyzed by; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Redox reaction
(hydride from; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Analysis
(hydride generated in assay for analyte; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Antibodies
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(immobilized, to acridinium compd., for removal of interfering substance from whole blood; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Blood analysis
Chemiluminescent substances
Diagnosis
Luminescence, chemiluminescence
Test kits
(measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Hydrides
RL: ANT (Analyte); ANST (Analytical study)
(measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Reagents
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Antibodies
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(monoclonal; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT Albumins, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(serum, conjugates with acridinium compd.; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT 53-59-8, NADP+ 53-84-9, NAD+ 146-14-5, FAD 146-17-8, FMN
RL: ARU (Analytical role, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
(hydride from redox reaction of; measurement of hydride using **chemiluminescent** acridinium compds.)
- IT 12184-88-2, Hydride 16940-66-2, NaBH4
RL: ANT (Analyte); ANST (Analytical study)
(measurement of hydride using **chemiluminescent** acridinium compds.)
- IT 53-57-6, NADPH 58-68-4, NADH
RL: ANT (Analyte); ARU (Analytical role, unclassified); THU (Therapeutic

use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 56-54-2, Quinidine 58-55-9, Theophylline, analysis 64-17-5, Ethanol,
analysis 99-66-1
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL
(Biological study); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 2315-97-1D, Lucigenin, compds. or conjugates 22559-70-2D, Quinolinium,
compds. or conjugates 22559-71-3D, Acridinium, compds. or conjugates
23686-76-2D, Phenanthridinium, compds. or conjugates 88373-54-0D,
compds. or conjugates
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
RACT (Reactant or reagent); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 272107-48-9P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
(Analytical study); PREP (Preparation); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 56-54-2D, Quinidine, conjugates with glucose-6-phosphate dehydrogenase
56-73-5, Glucose-6-phosphate 58-55-9D, Theophylline, conjugates with
glucose-6-phosphate dehydrogenase 99-66-1D, conjugates with
glucose-6-phosphate dehydrogenase 123-03-5 3724-65-0, Crotonic acid
9001-40-5D, Glucose-6-phosphate dehydrogenase, conjugates with
theophylline 9031-72-5, Alcohol dehydrogenase 29476-99-1
RL: ARG (Analytical reagent use); THU (Therapeutic use); ANST (Analytical
study); BIOL (Biological study); USES (Uses)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 75-07-0, Acetaldehyde, analysis
RL: ARU (Analytical role, unclassified); FMU (Formation, unclassified);
ANST (Analytical study); FORM (Formation, nonpreparative)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 333-27-7, Methyl trifluoromethanesulfonate 576-26-1 5336-90-3,
Acridine-9-carboxylic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 66074-67-7P, 9-Acridinecarbonyl chloride 216668-66-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 272107-49-0P 272107-50-3DP, conjugates with bovine serum albumin
RL: SPN (Synthetic preparation); PREP (Preparation)
(measurement of hydride using **chemiluminescent** acridinium
compds.)

IT 272107-51-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with bovine serum albumin; measurement of hydride using
chemiluminescent acridinium compds.)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Akhavan-Tafti, H; JOURNAL OF ORGANIC CHEMISTRY 1998, V63(4), P930 HCAPLUS
(2) Cook, D; CLINICAL CHEMISTRY 1993, V39(6), P965 HCAPLUS
(3) Czerlinski, G; JOURNAL OF BIOCHEMICAL AND BIOPHYSICAL METHODS 1988, V15,
P241 HCAPLUS
(4) Hammond, P; JOURNAL OF BIOLUMINESCENCE AND CHEMILUMINESCENCE 1991, V6(1),
P35 HCAPLUS

- (5) Johansson, A; JOURNAL OF IMMUNOLOGICAL METHODS 1986, V87, P7
 (6) Littig, J; JOURNAL OF BIOLUMINESCENCE AND CHEMILUMINESCENCE 1993, V8, P25 HCAPLUS
 (7) Mattingly, P; US 5669819 A 1997 HCAPLUS
 (8) Nakamura, S; CLINICA CHIMICA ACTA 1980, V101, P321 HCAPLUS
 (9) Sato, N; TETRAHEDRON LETTERS 1996, V37(47), P8519 HCAPLUS
 (10) Sotiriou-Leventis, C; US 5656426 A 1997 HCAPLUS

L61 ANSWER 6 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:219053 HCAPLUS

DN 132:262391

TI Compounds, compositions and methods for generating
chemiluminescence with phosphatase **enzymes**

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; Desilva, Renuka

PA Lumigen, Inc., USA

SO U.S., 57 pp., Cont.-in-part of U.S. Ser. No. 585,090, abandoned.

CODEN: USXXAM

DT Patent

LA English

IC ICM C09K003-00

ICS C12Q001-00

NCL 252700000

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 3, 7, 27

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6045727	A	20000404	US 1997-894143	19970813 <--
	WO 9726245	A1	19970724	WO 1997-US15	19970115 <--
	W: AU, CA, CN, JP, KR, US, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CN 1180349	A	19980429	CN 1997-190142	19970115 <--
	JP 2001158794	A2	20010612	JP 2000-287789	19970115 <--
	US 5965736	A	19991012	US 1998-208065	19981209 <--
	US 6090571	A	20000718	US 1999-358002	19990721 <--
	US 6139782	A	20001031	US 1999-358004	19990721 <--
	US 6270695	B1	20010807	US 1999-358003	19990721 <--
	US 6218137	B1	20010417	US 2000-540796	20000331 <--
	US 6296787	B1	20011002	US 2000-557726	20000426 <--
	CN 1312252	A	20010912	CN 2000-128335	20001117 <--
	US 2001031869	A1	20011018	US 2001-770015	20010125 <--
	US 6410732	B2	20020625		
	US 2003023089	A1	20030130	US 2002-54417	20020122 <--
PRAI	US 1996-585090	B2	19960116		<--
	US 1996-683927	B2	19960719		<--
	WO 1997-US15	W	19970115		<--
	JP 1997-526021	A3	19970115		<--
	US 1997-894143	A2	19970813		<--
	US 1999-358002	A1	19990721		<--
	US 2000-539816	B1	20000331		
	US 2000-557726	A2	20000426		

OS MARPAT 132:262391

AB Novel heterocyclic compds. which generate **chemiluminescence** on reaction with a phosphatase **enzyme** are provided as well as a process for their prepn. and intermediates useful therein. The compds. comprise a nitrogen, oxygen or sulfur-contg. heterocyclic ring system bearing an exocyclic carbon-carbon double bond. The double bond is further substituted at the distal carbon with a phosphate group and an oxygen or sulfur atom-contg. group. Novel compns. further comprising a cationic arom. compd. (CAC) in addn. to the heterocyclic phosphate compd. are provided. The addn. of the CAC in the compn. greatly increases the prodn. of **chemiluminescence** and provides improved detection sensitivity. Compns. further comprising an anionic surfactant and a

non-ionic surfactant provide addnl. improvements in detection sensitivity. The novel **chemiluminescent** compds. and compns. are useful in methods for producing **light** and in assays for phosphatase **enzymes** and **enzyme** inhibitors and in assays employing **enzyme**-labeled specific **binding pairs**.

- ST phosphatase **chemiluminescence** reagent; specific **binding**
assay phosphatase label **chemiluminescence**
- IT Blood analysis
(acid phosphatase detn. in; compds. and compns. and methods for
generating **chemiluminescence** with phosphatase **enzymes**
)
- IT Plant (Embryophyta)
(acid phosphatase of; compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes**)
- IT Bacteria (Eubacteria)
(alk. phosphatase of; compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes**)
- IT Surfactants
(as **chemiluminescence** enhancers; compds. and compns. and
methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT Phosphonium compounds
Quaternary ammonium compounds, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(as **chemiluminescence** enhancers; compds. and compns. and
methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT Immunoassay
(**chemiluminescence**, of hCG and TSH; compds. and compns. and
methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT **Chemiluminescence** spectroscopy
Luminescence, chemiluminescence
Southern blot hybridization
pH
(compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes**)
- IT Reagents
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes**)
- IT Biochemical molecules
(conjugates with alk. phosphatase; compds. and compns. and methods for
generating **chemiluminescence** with phosphatase **enzymes**
)
- IT Haptens
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(conjugates with alk. phosphatase; compds. and compns. and methods for
generating **chemiluminescence** with phosphatase **enzymes**
)
- IT Avidins
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(conjugates, with alk. phosphatase, in Southern blot assay; compds. and
compns. and methods for generating **chemiluminescence** with
phosphatase **enzymes**)
- IT Antibodies
Nucleic acids
Oligonucleotides
Proteins, specific or class
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(conjugates, with alk. phosphatase; compds. and compns. and methods for
generating **chemiluminescence** with phosphatase **enzymes**
)

- IT cDNA
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for human transferrin receptor, biotin-labeled, as probe; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Gene, animal
RL: ANT (Analyte); ANST (Analytical study)
(for human transferrin receptor; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT DNA
RL: AMX (Analytical matrix); ANST (Analytical study)
(human genomic; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Transferrins
RL: ANT (Analyte); ANST (Analytical study)
(human, Western blot assay of; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Transferrin receptors
RL: ANT (Analyte); ANST (Analytical study)
(human, cDNA for, as probe; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Immunoassay
(immunoblotting; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Fluoropolymers, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(membrane, in Western blot assay; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Mouse
(oncogene v-mos of, detection of, by Southern blot assay; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Mammal (Mammalia)
(phosphatase of; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Quaternary ammonium compounds, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(polymers, as **chemiluminescence** enhancers; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT Gene, animal
RL: ANT (Analyte); ANST (Analytical study)
(v-mos, detection of, of mouse, by Southern blot assay; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 155614-04-3, IR 1040
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(IR 1040, **chemiluminescence** enhancement by; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 57-09-0, Cetyltrimethylammonium bromide 151-21-3, Sodium dodecyl sulfate, analysis 2321-07-5D, Fluorescein, vinylbenzyl derivs., polymers contg. 9005-64-5, Tween 20 151346-37-1, Polyvinylbenzyltributylphosphonium chloride 151346-38-2 163342-81-2 263009-37-6 263009-38-7 263025-46-3
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(as **chemiluminescence** enhancer; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)

- enzymes)**
- IT 77121-68-7D, salts, polymer contg. 139728-22-6D, salts, polymer contg.
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (as **chemiluminescence** enhancers; compds. and compns. and
 methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT 514-73-8, 3,3'-Diethylthiadibocyanine iodide 1049-38-3,
 3,3'-Diethylselenacarbocyanine iodide 2197-01-5, 3,3'-Diethylthiacyanine
 iodide 2315-97-1, Lucigenin 3065-79-0, 3,3'-Diethyl-9-
 methylthiacarbocyanine iodide 12221-38-4, Basic Blue 66 12270-13-2,
 Basic Blue 41 42373-04-6, Basic Red 29 102185-03-5 105176-22-5
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (**chemiluminescence** enhancement by; compds. and compns. and
 methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT 7757-83-7, Sodium sulfite
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (**chemiluminescence** response to; compds. and compns. and
 methods for generating **chemiluminescence** with phosphatase
enzymes)
- IT 3715-17-1, Tartrate, analysis
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (**chemiluminescent** detection of acid phosphatase and
 inhibition by; compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes)**
- IT 9002-61-3, Chorionic gonadotropin
 RL: ANT (Analyte); ANST (Analytical study)
 (**chemiluminescent** immunoassay detection of, of human; compds.
 and compns. and methods for generating **chemiluminescence** with
 phosphatase **enzymes)**
- IT 9002-71-5, TSH
 RL: ANT (Analyte); ANST (Analytical study)
 (**chemiluminescent** immunoassay detection of,; compds. and
 compns. and methods for generating **chemiluminescence** with
 phosphatase **enzymes)**
- IT 50-28-2, Estradiol, analysis
 RL: ANT (Analyte); ANST (Analytical study)
 (**chemiluminescent** immunoassay detection of; compds. and
 compns. and methods for generating **chemiluminescence** with
 phosphatase **enzymes)**
- IT 9001-77-8, Acid phosphatase 9001-78-9 9001-78-9D, conjugates
 9013-05-2, Phosphatase
 RL: ANT (Analyte); ARG (Analytical reagent use); CAT (Catalyst use); ANST
 (Analytical study); USES (Uses)
 (compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes)**
- IT 193884-07-0P 193884-09-2P 193884-14-9P 193884-20-7P 193884-22-9P
 193884-27-4P 193884-29-6P 193884-33-2P 193884-36-5P 193884-42-3P
 193884-48-9P 193884-53-6P 193884-55-8P
 RL: ARG (Analytical reagent use); PRP (Properties); RCT (Reactant); SPN
 (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT
 (Reactant or reagent); USES (Uses)
 (compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes)**
- IT 209862-53-3 209862-54-4 209862-55-5 209862-56-6 209862-57-7
 209862-58-8 209862-59-9 209862-60-2 209862-61-3 209862-62-4
 209862-63-5 209862-64-6 209862-65-7 209862-66-8 209862-67-9
 209862-68-0 209862-69-1 209862-70-4 209862-71-5 221465-97-0
 221465-98-1 221465-99-2
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
 RACT (Reactant or reagent); USES (Uses)
 (compds. and compns. and methods for generating
chemiluminescence with phosphatase **enzymes)**

- IT 7439-95-4D, Magnesium, salts, analysis 7786-30-3, Magnesium chloride, analysis
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 127498-33-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (human transferrin receptor cDNA labeling with; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 58-85-5D, Biotin, conjugates with DNA fragments
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (in Southern blot assay; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 263009-41-2P 263009-42-3P 263009-44-5P 263009-45-6P 263009-47-8P 263009-48-9P
 RL: ARG (Analytical reagent use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (in acridan deriv. prepn.; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 193884-47-8P
 RL: BYP (Byproduct); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (in acridan deriv. prepn.; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 90-30-2, 1-Naphthylphenylamine 91-60-1, 2-Naphthalenethiol 101-16-6, 3-Methoxydiphenylamine 101-17-7, 3-Chlorodiphenylamine 106-54-7, 4-Chlorothiophenol 108-24-7, Acetic anhydride 108-95-2, Phenol, reactions 108-98-5, Thiophenol, reactions 109-78-4, 3-Hydroxypropionitrile 118-72-9, 2,6-Dimethylthiophenol 333-27-7, Methyl triflate 371-40-4, 4-Fluoroaniline 371-42-6, 4-Fluorothiophenol 460-00-4, 1-Bromo-4-fluorobenzene 576-26-1, 2,6-Dimethylphenol 696-63-9, 4-Methoxythiophenol 1544-53-2, 2,2,2-Trifluoroethanethiol 2713-34-0, 3,5-Difluorophenol 5336-90-3, Acridine-9-carboxylic acid 173407-41-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in acridan deriv. prepn.; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 330-91-6P, 4,4'-Difluorodiphenylamine 351-83-7P, 4-Fluoroacetanilide 6341-92-0P 34623-43-3P, Benz[c]acridine-7-carboxylic acid 35162-27-7P 42595-25-5P 66074-67-7P, Acridine-9-carbonyl chloride 109392-90-7P, Phenyl acridine-9-carboxylate 161006-09-3P 161006-14-0P 172834-34-3P 172834-63-8P 172834-71-8P, 3-Methoxyacridine-9-carboxylic acid 173407-14-2P 173407-20-0P 173407-22-2P 173407-32-4P 173407-42-6P 173407-43-7P 173407-45-9P 173407-47-1P 173407-48-2P 173407-52-8P 193884-06-9P 193884-10-5P 193884-11-6P 193884-12-7P 193884-15-0P 193884-17-2P 193884-18-3P 193884-21-8P 193884-23-0P 193884-24-1P 193884-25-2P 193884-28-5P 193884-30-9P 193884-32-1P 193884-34-3P 193884-35-4P 193884-37-6P 193884-38-7P 193884-39-8P 193884-40-1P 193884-41-2P 193884-43-4P 193884-44-5P 193884-45-6P 193884-46-7P 193884-49-0P 193884-50-3P 193884-51-4P 193884-52-5P 193884-54-7P 263009-31-0P 263009-32-1P 263009-33-2P 263009-34-3P 263009-35-4P 263009-40-1P 263009-43-4P 263009-46-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (in acridan deriv. prepn.; compds. and compns. and methods for generating **chemiluminescence** with phosphatase **enzymes**)
- IT 9004-70-0, Nitrocellulose 24937-79-9, Polyvinylidene difluoride

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (membrane, in Western blot assay; compds. and compns. and methods for
 generating **chemiluminescence** with phosphatase **enzymes**
)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

- (1) Akhvan-Tafti; US 5772926 1998 HCAPLUS
- (2) Kitamura, M; J Biolumin Chemilumin 1995, V10, P1 HCAPLUS
- (3) Maeda, M; Current Status 1991, P119 HCAPLUS
- (4) McComb, R; Alkaline Phosphatase 1979, P268
- (5) Miska, W; J Biolumin Chemilumin 1989, V4, P119 HCAPLUS
- (6) Myers, J; Science 1993, V262, P1451 HCAPLUS
- (7) Nakazono, M; Anal Sci 1992, V8, P779 HCAPLUS
- (8) Sasamoto, H; Anal Chim Acta 1995, V306, P161 HCAPLUS
- (9) Sasamoto, K; Chem Pharm Bull 1991, V38, P1323
- (10) Ugarova, N; Biolum and Chemi New Perspectives 1981, P511

L61 ANSWER 7 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:133665 HCAPLUS

DN 132:191423

TI Synthesis of near infrared **chemiluminescent** acridinium compounds
 and their application for labeling proteins and nucleotides

IN **Natrajan, Anand; Jiang, Qingping; Sharpe,**
David; Law, Say-Jong

PA **Bayer Corporation, USA**

SO PCT Int. Appl., 89 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C07D219-04

ICS G01N033-58; G01N033-533

CC 9-14 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000009487	A1	20000224	WO 1999-US18076	19990810 <--
	W:			AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	AU 9954739	A1	20000306	AU 1999-54739	19990810 <--
	EP 1104405	A1	20010606	EP 1999-941005	19990810 <--
	R:			AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO	
	US 6355803	B1	20020312	US 1999-371489	19990810 <--
	JP 2002522530	T2	20020723	JP 2000-564941	19990810 <--
	US 2002076823	A1	20020620	US 2001-6421	20011206 <--
PRAI	US 1998-96073P	P	19980811	<--	
	US 1999-371489	A3	19990810		
	WO 1999-US18076	W	19990810		

AB Our results identify two sets of necessary and sufficient criteria for observing long-wavelength emission from acridinium compds.: Set A: (a) the creation of an extended conjugation system by the attachment of appropriate functional groups on the acridinium nucleus (electronic requirement); (b) coplanarity of the attached functional group and the acridone moiety during **light** emission (geometry requirement); (c) said functional group must consist of at least one arom. ring and one electron-donating atom or group with an extra **pair** of electrons

which can readily delocalize into the extended .pi. system to which the heteroatom is directly attached or built into, and establish stable extended resonance with the electron-withdrawing carbonyl moiety of the **light** emitting acridone. Such electron-donating atom or group that exists in the form of an anion has particularly strong effect to further the bathochromic shift of the emission wavelength. Set B: (a) A direct attachment at one or more of positions C-2, C-4, C-5, or C-7 of the acridinium nucleus, of electron-donating atoms or groups having extra **pair(s)** of electrons. The electron-donating entities can be the same or different if more than one electron-donating entity is used. Such electron-donating atom or group that exists in the form of an anion has particularly strong effect to further the bathochromic shift of the emission wavelength. For mols. for which the above criteria are met such as LEAE, 3-HS-DMAE, and 2-hydroxy-DMAE long wavelength-emission exceeding 500 nm and reaching into NIR region is expected and obsd. Preferably, the utility of an NIR-AC of comparable quantum yield as the conventional acridinium compds. goes hand-in-hand with the employment of a **luminescence** detector of good to excellent detection efficiency.

To achieve efficient NIR signal detection and facilitate the performing of diagnostic assays, a further objective of the present invention is the advance of a concept and the realization of substituting a state-of-the-art charge-coupled device (CCD) detector for the red-insensitive photomultiplier tube (PMT) in a conventional fully or semi-automatic analyzer such as MLA-II of Chiron Diagnostics, Walpole, MA. near IR **chemiluminescent** acridinium deriv labeling protein DNA; acridinium deriv labeling protein DNA immunoassay hybridization fluorometry

IT Immunoassay

(fluorescence; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT Albumins, analysis

RL: ANT (Analyte); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)

(serum, conjugates NSB-3-HS-DMAE-BSA, 3-HS-DMAE-BSA, NSB-3-MS-DMAE-BSA, 2-HS-DMAE-BSA; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT Antibiotic resistance

Fluorometry

Nucleic acid hybridization

(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT Nucleotides, uses

Proteins, general, uses

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT Antibodies

RL: ANT (Analyte); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)

(to TSH, conjugates NSB-3-HS-DMAE-anti-TSH, NSB-3-MS-DMAE-anti-TSH; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT 259169-31-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(2-BS-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT 259169-37-4P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)

- (2-HP-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-25-0P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(2-HS-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-47-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(2-MEM-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-45-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(2-MEM-DMAeE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-48-7P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(2-OH-DMAE-NHS; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-42-1P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(2-OH-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-16-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(3-BS-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-41-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(3-BzP-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-40-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(3-BzP-DMAeE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-11-4P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(3-HS-DMAE-NHS; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-10-3P
RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(3-HS-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-35-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

- (NSB-2-MS-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-32-9P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(NSB-2-MS-DMAE-NHS; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-36-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSB-2-MS-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-18-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSB-3-BS-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-17-0P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(NSB-3-HS-DMAE-NHS; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-19-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSB-3-HS-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-23-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSB-3-MS-DMAE-Bz; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-20-5P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(NSB-3-MS-DMAE-NHS; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259169-24-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(NSB-3-MS-DMAE; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259783-64-7DP, conjugate with 2-OH DMAE
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(Vanco A probe 526.20; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259783-68-1
RL: ANT (Analyte); ANST (Analytical study)
(Vanco A synthetic target 526.53, vancomycin A resistance gene; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259783-65-8DP, conjugate with DMAE

- RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(Vanco B probe 495.23; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 148794-24-5D, DMAE, conjugate with vancomycin A probe 259783-69-2
RL: ANT (Analyte); ANST (Analytical study)
(Vanco B synthetic target 459.23, vancomycin B resistance gene; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259783-66-9P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(cross-linked Vanco A PMP-probe 557.22; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 259783-67-0P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(cross-linked Vanco B PMP-probe 496.20; synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 9002-71-5, Thyroid stimulating hormone
RL: ANT (Analyte); ANST (Analytical study)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 10602-01-4DP, conjugate with BSA 259169-11-4DP, conjugate with BSA
259169-19-2DP, conjugates with BSA and anti-TSH 259169-24-9DP, conjugates with BSA and anti-TSH
RL: ANT (Analyte); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 3462-97-3P 22559-71-3DP, Acridinium, derivs.
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 1404-90-6, Vancomycin
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 91-56-5, Isatin 107-21-1, 1,2-Ethanediol, reactions 538-75-0, Dicyclohexylcarbodiimide 540-38-5, 4-Iodophenol 603-35-0, Triphenyl phosphine, reactions 824-94-2, 4-Methoxybenzyl chloride 836-42-0, 4-Benzyloxybenzyl chloride 1122-91-4, 4-Bromobenzaldehyde 1633-83-6, 1,4-Butane sultone 3970-21-6, Methoxyethoxymethyl chloride 6066-82-6, n-Hydroxysuccinimide 7681-65-4, Copper iodide (CuI) 17789-14-9, 2-(3-Bromophenyl)-1,3-dioxolane 37181-39-8, Trifluoromethanesulfonate 115853-69-5 259169-34-1 259169-38-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)
- IT 1875-19-0P 10602-01-4P 199190-18-6P 221057-35-8P 221057-36-9P
259169-12-5P 259169-13-6P 259169-14-7P 259169-21-6P 259169-26-1P
259169-27-2P 259169-28-3P 259169-29-4P 259169-30-7P 259169-33-0P
259169-39-6P 259169-42-1DP, conjugate with Vancomycin A probe
259169-43-2P 259169-44-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of near IR **chemiluminescent** acridinium compds. and application for labeling proteins and nucleotides)

IT 259169-22-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (synthesis of near IR **chemiluminescent** acridinium compds. and
 application for labeling proteins and nucleotides)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ciba Corning Diagnostics Corp; EP 0263657 A 1988 HCAPLUS
- (2) Ciba Corning Diagnostics Corp; EP 0353971 A 1990 HCAPLUS
- (3) Ciba Corning Diagnostics Corp; EP 0361817 A 1990 HCAPLUS
- (4) Nederlanden Staat; WO 9802421 A 1998 HCAPLUS

L61 ANSWER 8 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:84970 HCAPLUS

DN 132:134365

TI Labeled **complex**, process for producing the **complex**,
 and uses

IN Machida, Masayuki; Tajima, Hideji

PA Japan as Represented by Director-General of Agency of Industrial Science
 and, Japan; Precision System Science Co., Ltd.

SO PCT Int. Appl., 52 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM C12N015-10

ICS C12N011-00; C12Q001-68; C07K001-22

CC 9-15 (Biochemical Methods)

Section cross-reference(s): 3

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000005357	A1	20000203	WO 1999-JP3824	19990715 <--
	W: JP, US				
	RW: DE, FR, GB				
	EP 1099756	A1	20010516	EP 1999-929854	19990715 <--
	R: DE, FR, GB				
PRAI	JP 1998-206057	A	19980722 <--		
	WO 1999-JP3824	W	19990715 <--		

AB A labeled **complex** as a multimol. marker in combinatorial chem.,
 its method of prodn., and the uses are disclosed. The labeled
complex makes it possible to stably and clearly distinguish
 several thousands to tens of thousands of various micro substances with
 high sensitivity and accuracy and to simultaneously satisfy the
 requirements for improving the ability to capture targets, enhancing the
 distinguishing sensitivity, and increasing the no. of substances to be
 distinguished. The above labeled **complex** is composed of a micro
 particle, a no. of target-carrying substances each linked at one end to
 the micro particle, and a label linked to each target-carrying substance
 at another end, wherein each of the target-carrying substances carries or
 is capable of carrying one or more targets, and the whole labeled
 substance is constituted so that definite types are contained therein at a
 definite ratio and distributed to all of the target-carrying substances
 bonded thereto. The target-carrying substances can be a synthetic
 substance contg. a biol. macromol. such as nucleic acid, peptide, protein,
 polysaccharide, or lipid, or organisms such as virus or bacteria or their
 parts. The label can be a luminescent substance such as fluorescent
 substance, phosphorescent substance, or a **chemiluminescent**
 substance. DNA fragment can be coated with one of the **pair** of
 specifically bonding substances such as avidin and biotin, or an
 allelopathic substance such as magnetic particle. A method of detecting a
 label by passing it through a **light** transmitting capillary, and
 an app. for the purpose are also described.

ST label **complex** combinatorial chem micro particle carrier

IT Annealing

(DNA strands, for synthesis of labeled **complex**; labeled **complex**, process for producing the **complex**, and uses)

IT **Enzymes**, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(DNA-restriction-modification; labeled **complex**, process for producing the **complex**, and uses)

IT Nucleic acid amplification (method)
(DNA; labeled **complex**, process for producing the **complex**, and uses)

IT Chemistry
(addn. compds.; labeled **complex**, process for producing the **complex**, and uses)

IT Macromolecular compounds
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(biol.; labeled **complex**, process for producing the **complex**, and uses)

IT DNA
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(double-stranded; labeled **complex**, process for producing the **complex**, and uses)

IT Analytical apparatus
Bacteria (Eubacteria)
Biotinylation
Capillary tubes
Chemiluminescent substances
Fluorescent substances
Labels
Luminescent substances
Microorganism
Microparticles
Phosphorescent substances
Spectrophotometry
Virus
(labeled **complex**, process for producing the **complex**, and uses)

IT Avidins
Lipids, uses
Nucleic acids
Peptides, uses
Polysaccharides, uses
Proteins, general, uses
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(labeled **complex**, process for producing the **complex**, and uses)

IT Isotopomers
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(labeled **complex**, process for producing the **complex**, and uses)

IT Primers (nucleic acid)
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(labeled **complex**, process for producing the **complex**, and uses)

IT DNA
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(labeled; labeled **complex**, process for producing the **complex**, and uses)

IT Microparticles
 Microparticles
 (magnetic; labeled **complex**, process for producing the **complex**, and uses)

IT Carriers
 (microcarriers; labeled **complex**, process for producing the **complex**, and uses)

IT Magnetic particles
 Magnetic particles
 (microparticles; labeled **complex**, process for producing the **complex**, and uses)

IT DNA
 RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
 (single-stranded; labeled **complex**, process for producing the **complex**, and uses)

IT 9015-85-4, DNA ligase
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (labeled **complex**, process for producing the **complex**, and uses)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Dade International Inc; JP 04503968 A
- (2) Dade International Inc; ES 2099156 T3 HCAPLUS
- (3) Dade International Inc; JP 2589618 B2
- (4) Dade International Inc; JP 2762259 B2 HCAPLUS
- (5) Dade International Inc; EP 463144 A HCAPLUS
- (6) Dade International Inc; EP 463144 A4 HCAPLUS
- (7) Dade International Inc; EP 463144 B HCAPLUS
- (8) Dade International Inc; US 5283079 A HCAPLUS
- (9) Dade International Inc; US 5395688 A HCAPLUS
- (10) Dade International Inc; AU 634631 B HCAPLUS
- (11) Dade International Inc; DE 69029908 E
- (12) Dade International Inc; WO 9109141 A HCAPLUS
- (13) Dade International Inc; AU 9171746 A HCAPLUS
- (14) Dade International Inc; JP 928397 A 1997
- (15) Hitachi Ltd; JP 06343496 A 1994 HCAPLUS
- (16) Tajima, S; Journal of the Applied Magnetics Assoc of Japan 1998, V22(5), P1010

L61 ANSWER 9 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:656005 HCAPLUS

DN 131:293099

TI Compositions and methods for generating red **chemiluminescence**

IN Akhavan-Tafti, Hashem

PA Lumigen, Inc., USA

SO U.S., 20 pp., Cont.-in-part of U.S. Ser. No. 894,143.

CODEN: USXXAM

DT Patent

LA English

IC C07F007-08; C07F009-6539

NCL 548110000

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 3, 9

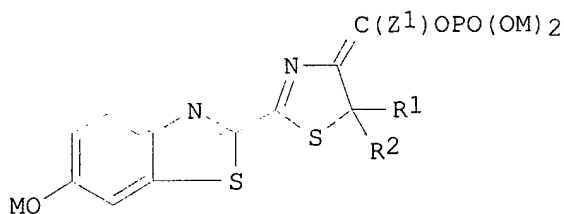
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5965736	A	19991012	US 1998-208065	19981209 <--
	WO 9726245	A1	19970724	WO 1997-US15	19970115 <--
	W: AU, CA, CN, JP, KR, US, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				

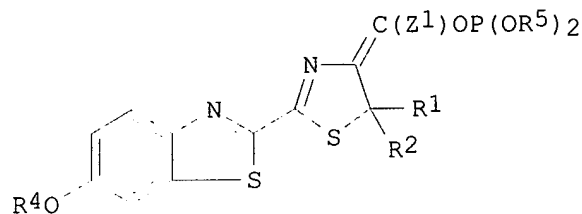
CN 1180349	A	19980429	CN 1997-190142	19970115 <--
JP 2001158794	A2	20010612	JP 2000-287789	19970115 <--
US 6045727	A	20000404	US 1997-894143	19970813 <--
AU 9961779	A1	20000615	AU 1999-61779	19991130 <--
EP 1008600	A2	20000614	EP 1999-309865	19991208 <--
EP 1008600	A3	20020227		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2000169459	A2	20000620	JP 1999-349396	19991208 <--
CN 1312252	A	20010912	CN 2000-128335	20001117 <--
PRAI US 1996-585090	B2	19960116	<--	
US 1996-683927	B2	19960719	<--	
WO 1997-US15	A2	19970115	<--	
US 1997-894143	A2	19970813	<--	
JP 1997-526021	A3	19970115	<--	
US 1998-208065	A	19981209	<--	
OS MARPAT 131:293099				
GI				



I



II

AB Compds. are described which have the general formulas I (Z1 = OR3 or SR3; R3 = (un)substituted alkyl, (un)substituted aryl, and (un)substituted aralkyls; R1 and R2 = independently selected (un)substituted alkyls or can be combined to form cycloalkyl, (un)substituted aryl, or (un)substituted aralkyl; and M = H or a cation selected from alkali metal ions, alk. earth ions, ammonium, quaternary ammonium, quaternary phosphonium ions, dicationic ammonium or phosphonium compds. and polymeric compds. with multiple cationic groups) and II (Z1 = OR3 or SR3; R3 = substituted or unsubstituted alkyl, (un)substituted aryl, and (un)substituted aralkyl groups, R1 and R2 are independently selected from (un)substituted alkyl, (un)substituted aryl, and (un)substituted aralkyl groups and can be joined to form an (un)substituted cycloalkyl group; R4 = a trialkylsilyl group, an alkyl-diarylsilyl group, an alkyl-carbonyl group or an aryl-carbonyl group; one R5 group is protecting group selected from substituted alkyl, trialkylsilyl, alkyl-diarylsilyl, and aralkyl groups, and the other R5 group is selected from substituted alkyl, trialkylsilyl, alkyl-diarylsilyl, and aralkyl groups or an alkali metal ion). The **chemiluminescent** materials can be applied in assays for phosphatase **enzymes** and in assays employing **enzyme**-labeled specific **binding** **pairs**.

ST luciferin deriv red **chemiluminescence**

IT Immunoassay

(**chemiluminescence enzyme**; luciferin derivs.
producing red **chemiluminescence** for)

IT Immunoassay
(immunoblotting; luciferin derivs. producing red
chemiluminescence for)

IT **Chemiluminescent** substances
(luciferin derivs. producing red **chemiluminescence**)

IT Dot blot hybridization
(luciferin derivs. producing red **chemiluminescence** for)

IT 246161-32-0P 246161-48-8P 246161-49-9P 246161-50-2P 246161-51-3P
246161-52-4P 246161-53-5P 246161-54-6P 246161-55-7P 246161-56-8P
246161-57-9P 246161-58-0P 246161-59-1P 246161-62-6P
RL: ARG (Analytical reagent use); PRP (Properties); RCT (Reactant); SPN
(Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT
(Reactant or reagent); USES (Uses)
(luciferin derivs. producing red **chemiluminescence**)

IT 246161-35-3P 246161-37-5P 246161-38-6P 246161-39-7P 246161-40-0P
246161-41-1P 246161-42-2P 246161-43-3P 246161-44-4P 246161-45-5P
246161-46-6P 246161-47-7P
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic
preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(luciferin derivs. producing red **chemiluminescence**)

IT 246160-95-2P 246161-16-0P 246161-30-8P 246161-60-4P 246161-61-5P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(luciferin derivs. producing red **chemiluminescence**)

IT 52-66-4, DL-Penicillamine 78-97-7, 2-Hydroxypropionitrile 106-54-7,
p-Chlorothiophenol 108-18-9, Diisopropylamine 108-98-5, Thiophenol,
reactions 110-86-1, Pyridine, reactions 288-32-4, Imidazole, reactions
530-62-1 939-69-5, 2-Cyano-6-hydroxybenzothiazole 1310-73-2, Sodium
hydroxide, reactions 3282-30-2, Pivaloyl chloride 3374-22-9, Cysteine
10025-87-3, Phosphoryl trichloride 27460-00-0, Thionaphthol 58479-61-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(luciferin derivs. producing red **chemiluminescence**)

IT 9002-71-5, Thyroid stimulating hormone 9031-11-2, .beta.-Galactosidase
RL: ANT (Analyte); ANST (Analytical study)
(luciferin derivs. producing red **chemiluminescence** for assay
of)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; WO 97/26245 1997 HCAPLUS
- (2) Hopkins, T; J Am Chem Soc 1967, V89, P7148 HCAPLUS
- (3) Kricka; US 5629168 1997 HCAPLUS
- (4) McElroy, W; Photochem Photobiol 1969, V10, P153 HCAPLUS
- (5) White, E; J Am Chem Soc 1966, V88, P2015 HCAPLUS
- (6) White, E; J Org Chem 1966, V31, P1484 HCAPLUS

L61 ANSWER 10 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:220082 HCAPLUS

DN 130:248735

TI **Chemiluminescence** compositions and methods for analysis of
peroxidase ~~enzymes~~

IN Akhavan-Tafti, Hashem

PA Lumigen, Inc., USA

SO PCT Int. Appl., 103 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q001-00

ICS C12Q001-28; C12Q001-68; C09K003-00; G01N021-76; G01N033-53

CC 7-1 (**Enzymes**)

Section cross-reference(s): 9, 28, 73

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 9914358 A1 19990325 WO 1998-US15813 19980812 <--
W: AU, CA, CN, JP, KR
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE
US 5922558 A 19990713 US 1997-928793 19970912 <--
CA 2300096 AA 19990325 CA 1998-2300096 19980812 <--
AU 9888975 A1 19990405 AU 1998-88975 19980812 <--
AU 733086 B2 20010503
EP 1019525 A1 20000719 EP 1998-940778 19980812 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, FI
JP 2001516589 T2 20011002 JP 2000-511896 19980812 <--
PRAI US 1997-928793 A 19970912 <--
WO 1998-US15813 W 19980812 <--
OS MARPAT 130:248735
AB Methods and compns. for generating **chemiluminescence** on reaction
with a peroxidase **enzyme** are provided as well as novel compds.
useful therein. The compds. comprise a C-C double bond substituted at one
carbon with two oxygen or sulfur atom-contg. groups. The compns. comprise
the double bond contg. compd., a peroxide and optionally a peroxidase
activity enhancing substance in an aq. soln. The compns. can addnl.
comprise a nonionic surfactant or a cationic surfactant or both to improve
detection sensitivity or the peroxidase. The novel
chemiluminescent methods and compns. are useful in assays for
peroxidase **enzymes** and in assays employing **enzyme**
-labeled specific **binding pairs**.
ST peroxidase **substrate chemiluminescent** analysis
IT Energy transfer
(agent; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
IT Hydroperoxides
RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process);
BSU (Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(alkyl; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
IT Amines, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(arom.; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
IT Acids, biological studies
Acids, biological studies
Group IIIA element compounds
Group IIIA element compounds
RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(boronic acids, aryl; **chemiluminescence** compns. and methods
for anal. of peroxidase **enzymes**)
IT Surfactants
(cationic; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
IT **Chemiluminescence** spectroscopy
Chemiluminescent substances
Immunoassay
Luminescence, chemiluminescence
Northern blot hybridization
Nucleic acid hybridization
Southern blot hybridization
(**chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)

- IT Peroxides, biological studies
RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process);
BSU (Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(**chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
- IT Phenols, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(**chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
- IT Heterocyclic compounds
RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); RCT (Reactant); SPN (Synthetic
preparation); ANST (Analytical study); BIOL (Biological study); PREP
(Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(**chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
- IT Immunoassay
(**chemiluminescence**; **chemiluminescence** compns. and
methods for anal. of peroxidase **enzymes**)
- IT Antibodies
Haptens
Nucleic acids
Oligonucleotides
Proteins, specific or class
RL: ANT (Analyte); ARU (Analytical role, unclassified); BAC (Biological
activity or effector, except adverse); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process)
(conjugates, with peroxidase; **chemiluminescence** compns. and
methods for anal. of peroxidase **enzymes**)
- IT Polyoxyalkylenes, biological studies
RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process)
(derivs.; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
- IT Immunoassay
(**enzyme**-linked immunosorbent assay; **chemiluminescence**
compns. and methods for anal. of peroxidase **enzymes**)
- IT Immunoassay
(immunoblotting; **chemiluminescence** compns. and methods for
anal. of peroxidase **enzymes**)
- IT Surfactants
(nonionic; **chemiluminescence** compns. and methods for anal. of
peroxidase **enzymes**)
- IT Group IIIA element compounds
RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process);
BSU (Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)
(perborates; **chemiluminescence** compns. and methods for anal.
of peroxidase **enzymes**)
- IT Alcohols, biological studies
Ethers, biological studies
Phenols, biological studies
RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process)
(polyoxyethylenated alkyl derivs.; **chemiluminescence** compns.
and methods for anal. of peroxidase **enzymes**)
- IT 9035-73-8, Oxidase

RL: ANT (Analyte); ARG (Analytical reagent use); ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 9003-99-0, Peroxidase 9003-99-0D, Peroxidase, conjugate 93229-67-5, Haloperoxidase

RL: ANT (Analyte); ARG (Analytical reagent use); ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 124-43-6 7722-84-1, Hydrogen peroxide (H2O2), biological studies
RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 42613-30-9, Lignin peroxidase

RL: ANT (Analyte); ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 9031-11-2, .beta.-Galactosidase

RL: ANT (Analyte); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 193884-06-9 193884-08-1 193884-13-8 193884-19-4 193884-21-8
193884-26-3 193884-28-5 193884-32-1 193884-35-4 193884-41-2
193884-46-7 193884-52-5 193884-54-7 209862-63-5 209862-64-6
209862-66-8 209862-67-9 209862-68-0 209862-69-1 209862-70-4
209862-71-5 221465-97-0 221465-98-1 221465-99-2 221466-00-8
221466-01-9 221466-02-0 221466-03-1 221466-04-2 221466-05-3
221466-06-4 221466-07-5 221466-08-6 221466-09-7 221466-10-0
221466-11-1

RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 193884-09-2P 193884-14-9P 193884-20-7P 193884-27-4P 193884-29-6P
193884-33-2P 193884-36-5P 193884-42-3P 193884-48-9P 209862-53-3P
209862-54-4P 209862-55-5P 209862-56-6P 209862-57-7P 209862-58-8P
209862-59-9P 209862-60-2P 209862-61-3P 209862-62-4P 221465-85-6P
221465-86-7P 221465-87-8P 221465-88-9P 221465-89-0P 221465-90-3P
221465-91-4P 221465-92-5P 221465-93-6P 221465-94-7P 221465-95-8P
221465-96-9P

RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 193884-07-0P 193884-22-9P 193884-53-6P 193884-55-8P

RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 57-09-0, CTAB 523-27-3, 9,10-Dibromoanthracene 9005-64-5, Tween 20
RL: ARU (Analytical role, unclassified); ANST (Analytical study)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 50-70-4D, Sorbitol, polyoxyethylenated esters 92-69-3, p-Phenylphenol 103-90-2, Acetaminophen 106-41-2, p-Bromophenol 120-83-2, 2,4-Dichlorophenol 135-19-3, 2-Naphthol, biological studies 540-38-5, p-Iodophenol 7400-08-0, p-Hydroxycinnamic acid 15231-91-1, 6-Bromo-2-naphthol 25322-68-3D, Polyethylene glycol, derivs. 208039-05-8
RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 106-54-7, 4-Chlorobenzenethiol 108-24-7 108-95-2, Phenol, reactions 108-98-5, Benzenethiol, reactions 117-34-0, Diphenylacetic acid 492-22-8, Thioxanthone 814-49-3 3282-30-2, Pivaloyl chloride 18162-48-6 60756-73-2 64709-55-3, 1-Pyreneacetic acid 161006-09-3 173407-41-5
RL: RCT (Reactant); RACT (Reactant or reagent)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 261-31-4P, Thioxanthene 17394-14-8P, Thioxanthene-9-carboxylic acid 54934-31-5P 58241-12-6P 221449-56-5P 221449-57-6P 221449-58-7P 221449-61-2P 221449-62-3P 221449-63-4P 221449-65-6P 221449-66-7P 221449-67-8P 221449-69-0P 221466-12-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 221449-42-9P 221449-43-0P 221449-44-1P 221449-45-2P 221449-46-3P 221449-47-4P 221449-48-5P 221449-49-6P 221449-50-9P 221449-51-0P 221449-52-1P 221449-53-2P 221449-54-3P 221466-13-3P
RL: SPN (Synthetic preparation); PREP (Preparation)

(chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 9007-43-6, Microperoxidase, biological studies
RL: ANT (Analyte); ARG (Analytical reagent use); ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)

(heme peptide; chemiluminescence compns. and methods for anal. of peroxidase enzymes)

IT 69279-19-2
RL: ANT (Analyte); ARG (Analytical reagent use); ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)

(vanadium-dependent; chemiluminescence compns. and methods for anal. of peroxidase enzymes)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Akhavan-Tafti, H; Proc Int Symp of 1996, V9th Ed, P311
(2) Lumigen Inc; WO 9726245 A1 1997 HCAPLUS

L61 ANSWER 11 OF 23 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:183770 HCAPLUS
DN 130:220167
TI Long emission wavelength chemiluminescent ring-fused acridinium compounds and their use in test assays

IN **Law, Say-jong; Jiang, Qingping; Fischer, Walter;**
 Unger, John T.; Krodell, Elizabeth K.; Xi, Jun
 PA Chiron Diagnostics Corporation, USA
 SO U.S., 80 pp., Cont.-in-part of U.S. 5,395,752.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM G01N033-53
 ICS G01N021-76; G01N033-566; G01N033-536
 NCL 435007100
 CC 9-5 (Biochemical Methods)
 Section cross-reference(s): 6, 27, 73
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5879894	A	19990309	US 1994-308772	19940919 <--
	US 5395752	A	19950307	US 1993-35130	19930319 <--
	AU 9455018	A1	19940922	AU 1994-55018	19940210 <--
	AU 677259	B2	19970417		
	CA 2118891	AA	19940920	CA 1994-2118891	19940311 <--
	WO 9421823	A1	19940929	WO 1994-US3020	19940318 <--
	W: PL				
	PL 178927	B1	20000630	PL 1994-306210	19940318 <--
	JP 08320319	A2	19961203	JP 1994-50109	19940322 <--
	US 5702887	A	19971230	US 1994-340093	19941114 <--
PRAI	US 1993-35130	A2	19930319 <--		
	WO 1994-US3020	W	19940318 <--		

AB The present invention relates to a new class of **chemiluminescent**, arom. ring-fused acridinium compds. (AFAC) which emit green or yellow **light** upon simple chem. treatments. This invention also relates to conjugates formed from AFAC and binding **partners**, e.g. biol. mols., and test assays utilizing the conjugates. The synthesis of **chemiluminescent** reagents or conjugates for use in such methods as well as kits incorporating such reagents are also disclosed. Furthermore, the invention relates to test assays in which the detection and/or quantitation of two or more substances or analytes in a test sample can be carried out simultaneously due to the discernable and non-interfering **light** emission characteristics of two or more **chemiluminescent** conjugates. The assays have particular application in the field of clin. diagnostics.

ST **chemiluminescent** acridinium compd synthesis immunoassay

IT Onium compounds

RL: ARU (Analytical role, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(acridinium, esters; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)

IT Onium compounds

RL: ARU (Analytical role, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(acridinium; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)

IT Diagnosis

(agents; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)

IT Immunoassay

(**chemiluminescence**; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)

IT Diagnosis

- (immunodiagnosis; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT Blood analysis
Blood serum
Chemiluminescence spectroscopy
Diagnosis
Immunoassay
Nucleic acid hybridization
Test kits
(long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT **Chemiluminescent** substances
Luminescence, chemiluminescence
(long emission wavelength; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT Antibodies
RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(monoclonal; long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT 9002-71-5, Thyrotropin
RL: ANT (Analyte); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT 9002-67-9, Luteinizing hormone 9002-68-0, Follicle-stimulating hormone
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT 158788-43-3P 221057-07-4P
RL: ARU (Analytical role, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT 158788-06-8P 158788-08-0P 158788-12-6P 158788-16-0P 158788-21-7P
158788-27-3P 158788-32-0P 158788-35-3P 158788-40-0P 221057-03-0P
221057-29-0P 221057-46-1P 221057-47-2P 221057-49-4P
RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation)
(long emission wavelength **chemiluminescent** ring-fused acridinium compds. and their use in test assays)
- IT 62-53-3, Aniline, reactions 74-96-4, Bromoethane 76-05-1, reactions
77-78-1, Dimethyl sulfate 91-56-5, Isatin 92-70-6,
3-Hydroxy-2-naphthoic acid 100-39-0, Benzyl bromide 104-94-9
106-44-5, reactions 107-21-1, 1,2-Ethanediol, reactions 108-46-3,
1,3-Benzenediol, reactions 128-08-5, N-Bromosuccinimide 135-88-6,
N-Phenyl-.beta.-naphthylamine 421-20-5, Methyl fluorosulfonate
540-38-5, p-Iodophenol 591-50-4, Iodobenzene 603-35-0,
Triphenylphosphine, reactions 609-09-6, Diethylketomalonate 696-62-8,
p-Iodoanisole 1069-72-3 1120-71-4, 1,3-Propane sultone 2078-54-8
2862-39-7 3132-99-8, 3-Bromobenzaldehyde 3724-65-0, Crotonic acid
4025-64-3, 3-(Chlorosulfonyl)benzoic acid 4584-46-7 4919-37-3
5810-96-8, Benzo[5,6]isatin 6066-82-6, N-Hydroxysuccinimide 6608-47-5,
Ethenesulfonyl chloride 58471-30-0 83194-74-5 87198-89-8
115853-69-5 126430-47-5 158788-29-5 158788-57-9,
Acridine-9-carboxylic acid hydrochloride 221057-40-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(long emission wavelength **chemiluminescent** ring-fused
acridinium compds. and their use in test assays)

IT 3196-40-5P, Benz[a]acridine-12-carbonyl chloride 6973-58-6P
13423-73-9P 17789-14-9P 60343-31-9P 65416-24-2P, Benzyl crotonate
93790-54-6P 125552-59-2P 130266-36-3P 130266-50-1P,
Benz[b]acridine-12-carboxylic acid 147410-81-9P 158788-09-1P
158788-10-4P 158788-13-7P 158788-14-8P 158788-18-2P 158788-19-3P
158788-24-0P 158788-25-1P 158788-30-8P 158788-31-9P 158788-34-2P
158788-36-4P 158788-38-6P 158788-41-1P 158788-44-4P 158788-46-6P
158788-49-9P, Benz[b]acridine-12-carbonitrile 158788-50-2P
158788-51-3P 158788-52-4P 158788-53-5P 158788-54-6P 158788-55-7P
158788-56-8P 158788-58-0P 158788-59-1P 158788-60-4P,
Benz[a]acridine-12-carboxylic acid 160116-96-1P 161159-44-0P
221057-01-8P 221057-04-1P 221057-05-2P 221057-12-1P 221057-13-2P
221057-14-3P 221057-35-8P 221057-36-9P 221057-37-0P 221057-41-6P
221057-42-7P 221057-44-9P 221057-50-7P 221057-51-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(long emission wavelength **chemiluminescent** ring-fused
acridinium compds. and their use in test assays)

IT 160098-34-0P 221057-34-7P 221057-38-1P 221057-39-2P 221057-52-9P

RL: SPN (Synthetic preparation); PREP (Preparation)

(long emission wavelength **chemiluminescent** ring-fused
acridinium compds. and their use in test assays)

RE.CNT 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akhavan-Tafti; US 5393469 1995 HCAPLUS
- (2) Anon; GB 506055 1937
- (3) Anon; GB 2026159 1980 HCAPLUS
- (4) Anon; GB 5045929 1980
- (5) Anon; EP 136126 1985 HCAPLUS
- (6) Anon; EP 194132 1986
- (7) Anon; GB 2163553 1986 HCAPLUS
- (8) Anon; EP 219309 1987 HCAPLUS
- (9) Anon; EP 233053 1987 HCAPLUS
- (10) Anon; EP 0263657 1988 HCAPLUS
- (11) Anon; EP 273115 1988 HCAPLUS
- (12) Anon; EP 296136 1988 HCAPLUS
- (13) Anon; EP 0322926 1989 HCAPLUS
- (14) Anon; EP 353971 1990 HCAPLUS
- (15) Anon; EP 361817 1990 HCAPLUS
- (16) Anon; EP 369344 1990 HCAPLUS
- (17) Anon; EP 421788 1991 HCAPLUS
- (18) Anon; EP 478626 1991 HCAPLUS
- (19) Anon; EP 0304202 1992 HCAPLUS
- (20) Anon; EP 481704 1992 HCAPLUS
- (21) Anon; EP 502638 1992
- (22) Anon; EP 0377729 1993 HCAPLUS
- (23) Anon; EP 537994 1993 HCAPLUS
- (24) Beheshti; US 5290936 1994 HCAPLUS
- (25) Blake; Clinical Chemistry 1982, V28, P1469 HCAPLUS
- (26) Bronstein; US 4931223 1990 HCAPLUS
- (27) Chang; US 4927769 1990 HCAPLUS
- (28) Chen; US 4385126 1983 HCAPLUS
- (29) Dean; Clinical Chemistry 1983, V29, P1051 HCAPLUS
- (30) Dombrowski; US 5151518 1992 HCAPLUS
- (31) Edwards; Journal of Bioluminescence and Chemiluminescence 1990, V5, P1
HCAPLUS
- (32) Elslager; US 2902403 1959 HCAPLUS
- (33) Gundermann; Topics in Current Chemistry 1974, V46, P61 HCAPLUS
- (34) Katsilometes; US 5340714 1994 HCAPLUS
- (35) Law; US 4745181 1988 HCAPLUS

(36) Law; US 4918192 1990 HCAPLUS
 (37) Law; US 5110932 1992 HCAPLUS
 (38) Law; US 5227489 1993 HCAPLUS
 (39) Law; US 5241070 1993 HCAPLUS
 (40) Law; US 5395752 1995 HCAPLUS
 (41) Law; US 5449556 1995 HCAPLUS
 (42) Law; US 5702887 1997 HCAPLUS
 (43) Lewis; US 5447687 1995 HCAPLUS
 (44) Lonky; US 5179938 1993
 (45) Mabile; US 5527684 1996 HCAPLUS
 (46) Maggio; US 4277437 1981 HCAPLUS
 (47) Mattingly; US 5468646 1995 HCAPLUS
 (48) McCapra; US 5281712 1994 HCAPLUS
 (49) McCapra; US 5283334 1994 HCAPLUS
 (50) McCapra; US 5284951 1994 HCAPLUS
 (51) McCapra; US 5321136 1994 HCAPLUS
 (52) McCapra; US 5338847 1994 HCAPLUS
 (53) Moore; US 2981731 1961 HCAPLUS
 (54) Mullis; US 4683202 1987 HCAPLUS
 (55) Ramsey; US 5206179 1993 HCAPLUS
 (56) Ranakrishnan; US 5284952 1994 HCAPLUS
 (57) Rubenstein; US 3817837 1974 HCAPLUS
 (58) Sakaide; US 3849653 1974
 (59) Sheehan; US 3352791 1967
 (60) Ullman; US 3689391 1972 HCAPLUS
 (61) Ullman; US 4584277 1986 HCAPLUS
 (62) Ullman; US 4713348 1987 HCAPLUS
 (63) Woodhead; US 5656207 1997 HCAPLUS

L61 ANSWER 12 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1998:785598 HCAPLUS

DN 130:33956

TI **Chemiluminescent detection methods using dual
enzyme-labeled binding partners**

IN Akhavan-Tafti, Hashem; Sugioka, Katsuaki; Sugioka, Yumiko; Reddy, Lekkala V.

PA Lumigen, Inc., USA

SO U.S., 23 pp., Cont.-in-part of U.S. Ser. No. 300,367.

CODEN: USXXAM

DT Patent

LA English

IC ICM G01N033-535

NCL 435006000

CC 3-1 (Biochemical Genetics)

Section cross-reference(s): 6, 9, 13,

14

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5843666	A	19981201	US 1996-749595	19961115 <--
	US 5686258	A	19971111	US 1994-300367	19940902 <--
	CA 2259963	AA	19980522	CA 1997-2259963	19971107 <--
	WO 9821586	A1	19980522	WO 1997-US19612	19971107 <--
	W: AU, CA, CN, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	AU 9850940	A1	19980603	AU 1998-50940	19971107 <--
	AU 726512	B2	20001109		
	EP 938677	A1	19990901	EP 1997-913856	19971107 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001504226	T2	20010327	JP 1998-522595	19971107 <--
PRAI	US 1994-300367	A2	19940902	<--	
	US 1993-61810	A2	19930517	<--	

US 1994-205093 A2 19940302 <--
 US 1994-228290 A2 19940415 <--
 US 1996-749595 A 19961115 <--
 WO 1997-US19612 W 19971107 <--

OS MARPAT 130:33956

AB Methods of detecting analytes or target species using two **enzyme**-labeled specific **binding partners** where the two **enzymes** function in concert to produce a detectable **chemiluminescent** signal are disclosed. The methods use a specific **binding partner** labeled with a **hydrolytic enzyme** to produce a phenolic enhancer in close proximity to a peroxidase-labeled second specific **binding partner**. The method is useful to detect and quantitate with improved specificity various biol. mols. including antigens and antibodies by the technique of immunoassay, proteins by Western blotting, DNA by Southern blotting, RNA by Northern blotting. The method may also be used to detect DNA mutations and juxtaposed gene segments in chromosomal translocations and particularly to unambiguously identify heterozygous genotypes in a single test.

ST **chemiluminescent** analysis **dual enzyme** label
 probe hybridization

IT **Chemiluminescence** spectroscopy
Chemiluminescent substances
 Chromosome
 Cystic fibrosis
 Epitopes
 Filters
 Human immunodeficiency virus 1
 Immunoassay
Luminescence, chemiluminescence
 Membranes, nonbiological
 Molecular association
 Mutation
 Northern blot hybridization
 Nucleic acid hybridization
 PCR (polymerase chain reaction)
 Southern blot hybridization
 Test tubes
 (**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT DNA
 Proteins, general, biological studies
 RNA
 RL: ANT (Analyte); ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)
 (**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Gene
 RL: ANT (Analyte); BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence)
 (**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Antibodies
 Antigens
 Nucleic acids
 RL: ANT (Analyte); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)
 (**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Peroxides, analysis

Phenols, analysis

RL: ARU (Analytical role, unclassified); ANST (Analytical study)

(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT **Enzymes**, biological studies

RL: ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Avidins

Haptens

Oligonucleotides

Probes (nucleic acid)

RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Gene, animal

RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)

(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Disease, animal

(genetic, recessive; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Diagnosis

(genetic; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Envelope proteins

RL: ANT (Analyte); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(gp120env; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Genotypes

(heterozygosity; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT **Enzymes**, biological studies

RL: ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(**hydrolytic**; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Polyethers, analysis

RL: ARU (Analytical role, unclassified); ANST (Analytical study)

(hydroxy-contg.; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Immunoassay

(immunoblotting; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)

IT Diagnosis

(mol.; **chemiluminescent** detection methods using **dual**

- enzyme-labeled binding partners)**
- IT Milk
(non-fat; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Surfactants
(nonionic; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Group IIIA element compounds
RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)
(perborates; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Recombination, genetic
(rearrangement; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Phosphates, biological studies
RL: ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)
(salts; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Immunoassay
(sandwich; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Albumins, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(serum; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Recombination, genetic
(translocation; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT Polymers, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(water-sol.; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT 9002-61-3, Human chorionic gonadotropin
RL: ANT (Analyte); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT 9005-64-5, Tween 20 13095-41-5, 2-Naphthyl phosphate 216500-60-6
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners)**
- IT 92-69-3, p-Phenylphenol 103-90-2, p-Hydroxyacetanilide 106-41-2, p-Bromophenol 106-48-9, p-Chlorophenol 120-83-2, 2,4-Dichlorophenol 135-19-3, 2-Naphthol, biological studies 500-85-6, Phenolindophenol 540-38-5, p-Iodophenol 939-69-5, 2-Cyano-6-hydroxy-benzothiazole 2591-17-5, Luciferin 2975-55-5 2975-55-5D, halogenated 7400-08-0, p-Hydroxycinnamic acid 9001-22-3, .beta.-Glucosidase 9001-45-0, .beta.-Glucuronidase 9001-78-9, Alkaline phosphatase 9003-99-0, Peroxidase 9016-18-6, Carboxyl esterase 9031-11-2, .beta.-Galactosidase 13388-88-0 13599-84-3, 6-Hydroxybenzothiazole

15231-91-1, 6-Bromo-2-naphthol 20056-42-2 20115-09-7, Dehydroluciferin
 24154-09-4 46817-52-1 75966-18-6 108672-78-2 129058-46-4
 137015-67-9 207920-67-0 207920-68-1 207920-68-1D, halogenated
 207920-69-2 207920-70-5 207920-71-6 208039-05-8 208039-06-9
 208039-07-0 208039-08-1

RL: ARU (Analytical role, unclassified); BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(chemiluminescent detection methods using dual enzyme-labeled binding partners)

IT 58-85-5, Biotin 124-43-6 521-31-3, Luminol 1672-46-4, Digoxigenin 2321-07-5, Fluorescein 7607-80-9 7722-84-1, Hydrogen peroxide, biological studies 9013-20-1, Streptavidin 207996-97-2D, 5' biotin conjugate 208057-32-3D, 3' fluorescein conjugate

RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(chemiluminescent detection methods using dual enzyme-labeled binding partners)

IT 134709-72-1 207996-96-1

RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(primer; chemiluminescent detection methods using dual enzyme-labeled binding partners)

IT 207996-94-9D, 5' conjugate with fluorescein 207996-95-0D, conjugate with digoxigenin 207996-98-3D, 5' biotin conjugate 207996-99-4D, 5' digoxigenin conjugate

RL: ARU (Analytical role, unclassified); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(probe; chemiluminescent detection methods using dual enzyme-labeled binding partners)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

- (1) Akhavan-Tafti; US 5491072 1996 HCAPLUS
- (2) Akhavan-Tafti; US 5523212 1996 HCAPLUS
- (3) Akhavan-Tafti; US 5552298 1996 HCAPLUS
- (4) Albarella; US 4563417 1986 HCAPLUS
- (5) Anon; EP 0185494 1986 HCAPLUS
- (6) Cook, D; Clin Chem 1993, V39, P965 HCAPLUS
- (7) Ii, M; Biochem Biophys Res Comm 1993, V193(2), P540 HCAPLUS
- (8) Johannsson, A; Clin Chim Acta 1985, V148, P119 HCAPLUS
- (9) Kricka; US 5306621 1994 HCAPLUS
- (10) Laemmli, U; Nature 1970, V227, P680 HCAPLUS
- (11) Martinelli, R; Clin Chem 1996, V42, P14 HCAPLUS
- (12) Obzansky, D; Clin Chem 1991, V37, P1513 HCAPLUS
- (13) Oyama; US 5206149 1993 HCAPLUS
- (14) Rabbitts, T; Nature 1994, V372, P143 HCAPLUS
- (15) Serre, J; Genomics 1991, V11, P1149 HCAPLUS
- (16) Sugiyama; US 5171668 1992 HCAPLUS
- (17) Thorpe, G; Bioluminescence and Chemiluminescence New Perspectives 1987, P199 HCAPLUS
- (18) Tsuji, A; Anal Sci 1989, V5, P497 HCAPLUS
- (19) Ullman; US 5516641 1996 HCAPLUS
- (20) Wigle, D; BioTechniques 1993, V14, P562 HCAPLUS
- (21) Yamaguchi; US 5324835 1994 HCAPLUS

L61 ANSWER 13 OF 23 HCAPLUS COPYRIGHT 2003 ACS
 AN 1998:435771 HCAPLUS
 DN 129:106280

TI **Chemiluminescent** reactions using dihydroxyaromatic compounds and heterocyclic enol phosphates

IN Akhavan-Tafti, Hashem

PA Lumigen, Inc., USA

SO U.S., 32 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM C09K003-00

ICS C12Q001-00

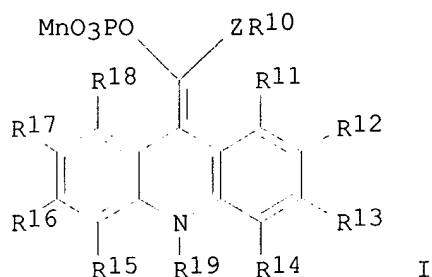
NCL 252700000

CC **9-15 (Biochemical Methods)**

Section cross-reference(s): 73, 80

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5772926	A	19980630	US 1997-855421	19970513 <--
	US 5840963	A	19981124	US 1998-21322	19980210 <--
	WO 9940161	A1	19990812	WO 1998-US11489	19980612 <--
	W: AU, CA, CN, JP, KR				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	AU 9880576	A1	19990823	AU 1998-80576	19980612 <--
	AU 743524	B2	20020131		
	EP 1054933	A1	20001129	EP 1998-928882	19980612 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002502596	T2	20020129	JP 2000-530578	19980612 <--
	CA 2320208	AA	19990812	CA 1999-2320208	19990612 <--
PRAI	US 1997-855421	A3	19970513	<--	
	US 1998-21322	A	19980210	<--	
	WO 1998-US11489	W	19980612	<--	
OS	MARPAT 129:106280				
GI					



AB Methods of generating **chemiluminescence** entail reacting, in the presence of oxygen, a dihydroxyarom. compd. which comprises from 1-5 carbocyclic arom. rings and which is substituted with two hydroxy groups sepd. by an even no. of ring carbon atoms with a heterocyclic enol phosphate compd. described by the general formula I (R10 is an org. group contg. up to 50 non-hydrogen atoms selected from C, N, O, S, P and halogen atoms; R11-18 are independently selected from hydrogen, (un)substituted alkyl, (un)substituted aryl, (un)substituted aralkyl, alkenyl, alkynyl, alkoxy, aryloxy, halogen, (un)substituted amino, carboxyl, carboalkoxy, carboxamide, cyano, and sulfonate groups; **pairs** of adjacent groups can complete a benzo-fused ring; R19 is an org. group contg. .ltoreq.50 nonhydrogen atoms selected from C, N, O, S, P and halogen

atoms; Z = O or S; M is independently selected from H and a cationic center; n is a no. which satisfies electroneutrality; any one of R11-18 or a substituent on any one of R10-19 can be a group -A-Q; A is a spacer group selected from C1-10 alkylene and C2-10 oxyalkylene groups; and Q is a linking group capable of forming a covalent bond selected from halogen, diazo, -NCO, -NCS, -CHO, acid anhydride, oxiranyl, succinimidoxycarbonyl, maleimide, cyano, triazole, tetrazole, hydroxyl, -COOH, thiol, and primary and secondary amino groups). **Chemiluminescent** compns. comprising the dihydroxyarom. and heterocyclic enol phosphate compds. described above are also described. Methods and compns. for generating **chemiluminescence** by reaction with a **hydrolytic enzyme** are also described which employ a protected dihydroxyarom. compd. in which one of the hydroxy groups of the dihydroxyarom. compd. is protected with an **enzyme-cleavable** group. The compns. are useful in methods for producing **chemiluminescence** for use in assays of **hydrolytic enzymes** and **enzyme** inhibitors and in assays employing labeled specific **binding pairs**.

- ST **enzyme** assay **chemiluminescent** compn; immunoassay **chemiluminescent** compn; heterocyclic enol phosphate compd **chemiluminescent** compn; dihydroxyarom compd **chemiluminescent** compn
- IT Immunoassay
(**chemiluminescence**; **chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT **Chemiluminescent** substances
(**chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT DNA
RL: ANT (Analyte); ANST (Analytical study)
(**chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT Indicators
(**chemiluminescent**; **chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT Immunoassay
(**enzyme**, dot-blot; **chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT Immunoassay
(immunoblotting; **chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT 77-08-7 95-71-6 476-66-4, Ellagic acid 525-72-4 533-73-3, 1,2,4-Trihydroxybenzene 571-60-8, 1,4-Dihydroxynaphthalene 574-84-5, 7,8-Dihydroxy-6-methoxycoumarin 577-95-7, 1,2-Anthracenediol 824-46-4, 2-Methoxyhydroquinone 1079-21-6, 2-Phenylhydroquinone 1194-98-5, 2,5-Dihydroxybenzaldehyde 6626-15-9, 4-Bromoresorcinol 13066-95-0, 4-Amino-resorcinol 14918-69-5, 2,3-Dichloro-5,8-dihydroxy-1,4-naphthoquinone 17648-03-2 179803-79-3 193884-09-2 193884-14-9 193884-20-7 193884-27-4 193884-29-6 193884-33-2 193884-36-5 193884-42-3 193884-48-9 209862-52-2 209862-53-3 209862-54-4 209862-55-5 209862-56-6 209862-57-7 209862-58-8 209862-59-9 209862-60-2 209862-61-3 209862-62-4 209862-63-5 209862-64-6 209862-65-7 209862-66-8 209862-67-9 209862-68-0 209862-69-1 209862-70-4 209862-71-5
RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)
(**chemiluminescent** reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
- IT 120-80-9, Catechol, reactions 123-31-9, 1,4-Benzenediol, reactions 615-67-8, 2-Chlorohydroquinone 771-63-1
RL: ARG (Analytical reagent use); PRP (Properties); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(**chemiluminescent** reactions using dihydroxyarom. compds. and

heterocyclic enol phosphates)
IT 20368-79-0P 35119-91-6P 125095-13-8P 193884-07-0P 193884-22-9P
193884-53-6P 193884-55-8P 209862-48-6P 209862-49-7P 209862-50-0P
209862-51-1P
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(chemiluminescent reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
IT 109392-90-7P, Phenyl acridine-9-carboxylate 161006-09-3P 161006-14-0P
173407-14-2P 173407-22-2P 173407-32-4P 193884-06-9P 193884-21-8P
193884-49-0P 193884-50-3P 193884-51-4P 193884-52-5P 193884-54-7P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chemiluminescent reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
IT 64-19-7, Acetic acid, reactions 91-60-1, 2-Naphthal-enethiol 106-54-7
108-18-9, Diisopropylamine 108-95-2, Phenol, reactions 109-72-8, n-Butyl lithium, reactions 109-78-4 110-86-1, Pyridine, reactions 333-27-7, Methyl trifluoromethanesulfonate 4111-54-0, LDA (reagent) 5336-90-3, Acridine-9-carboxylic acid 173407-41-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemiluminescent reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
IT 66074-67-7P, Acridine-9-carbonyl chloride
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chemiluminescent reactions using dihydroxyarom. compds. and heterocyclic enol phosphates)
IT 9001-22-3, .beta.-Glucosidase 9001-45-0, .beta.-Glucuronidase 9001-77-8, Acid phosphatase 9001-78-9, Alkaline phosphatase 9031-11-2, .beta.-Galactosidase
RL: ANT (Analyte); ANST (Analytical study)
(chemiluminescent reactions using dihydroxyarom. compds. and heterocyclic enol phosphates for assay of)
RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Akhavan-Tafti; US 5393469 1995 HCAPLUS
(2) Akhavan-Tafti; US 5451347 1995 HCAPLUS
(3) Alam, J; Anal Biochem 1990, V188, P245 HCAPLUS
(4) Anon; WO 9607911 1996 HCAPLUS
(5) Anon; WO 9726245 1997 HCAPLUS
(6) Arakawa, H; Anal Biochem 1991, V199, P238 HCAPLUS
(7) Kitamura, M; J Biolum Chemilum 1995, V10, P1 HCAPLUS
(8) Kricka; US 5306621 1994 HCAPLUS
(9) Law; US 5595875 1997 HCAPLUS
(10) Maeda, M; Biolum and Chemilum Current Status 1991, 91, P119
(11) Mahant; US 5589328 1996 HCAPLUS
(12) McComb, R; Alkaline Phosphatases 1979, P268
(13) Miska, W; J Biolum Chemilum 1989, V4, P119 HCAPLUS
(14) Nakazono, M; Anal Sci 1992, V8, P779 HCAPLUS
(15) Sasamoto, H; Anal Chim Acta 1995, V306, P161 HCAPLUS
(16) Sasamoto, K; Chem Pharm Bull 1991, V38, P1323
(17) Schaap, A; Photochem Photobiol 1988, V47S, P50S
(18) Schaap, A; Tetrahedron Lett 1987
(19) Schaap, A; Tetrahedron Lett 1987, P1155 HCAPLUS
(20) Schaap, A; Tetrahedron Letters 1987, P1159 HCAPLUS
(21) Singh; US 5578498 1996 HCAPLUS
(22) Tsuji, A; Anal Sci 1989, V5, P497 HCAPLUS
(23) Ugarova, N; Biolum and Chemilum New Perspectives 1981, P511

L61 ANSWER 14 OF 23 HCAPLUS COPYRIGHT 2003 ACS
AN 1998:344578 HCAPLUS
DN 129:25385

TI **Chemiluminescent detection methods using dual enzyme-labeled binding partners**

IN Akhavan-Tafti, Hashem; Sugioka, Katsuaki; Sugioka, Yumiko; Reddy, Lekkala V.

PA Lumigen, Inc., USA

SO PCT Int. Appl., 65 pp.
CODEN: PIXXD2

DT Patent

LA English

IC ICM G01N033-535

CC **9-5 (Biochemical Methods)**
Section cross-reference(s): 3, 7, 15

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9821586	A1	19980522	WO 1997-US19612	19971107 <--
	W: AU, CA, CN, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5843666	A	19981201	US 1996-749595	19961115 <--
	AU 9850940	A1	19980603	AU 1998-50940	19971107 <--
	AU 726512	B2	20001109		
	EP 938677	A1	19990901	EP 1997-913856	19971107 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001504226	T2	20010327	JP 1998-522595	19971107 <--
PRAI	US 1996-749595	A	19961115	<--	
	US 1994-300367	A2	19940902	<--	
	WO 1997-US19612	W	19971107	<--	
OS	MARPAT 129:25385				
AB	<p>Methods of detecting analytes or target species using two enzyme -labeled specific binding partners where the two enzymes function in concert to produce a detectable chemiluminescent signal are disclosed. The methods use a specific binding partner labeled with a hydrolytic enzyme to produce a phenolic enhancer in close proximity to a peroxidase-labeled second specific binding partner. The method is useful to detect and quantitate with improved specificity various biol. mols. including antigens and antibodies by the technique of immunoassay, proteins by Western blotting, DNA by Southern blotting, RNA by Northern blotting. The method may also be used to detect DNA mutations and juxtaposed gene segments in chromosomal translocations and particularly to unambiguously identify heterozygous genotypes in a single test. Cystic fibrosis .DELTA.F508 mutation was detected by Southern transfer and hybridization using biotin-labeled oligonucleotide complementary to the normal allele and digoxigenin-labeled oligonucleotide complementary to the mutant allele, anti-digoxigenin antibody conjugated with alk. phosphatase, and avidin-horseradish peroxidase. Detection reagent contained protected horseradish peroxidase enhancer 2-naphthyl phosphate, chemiluminescent peroxidase substrate 2,3,6-trifluorophenyl 10-methylacridan-9-carboxylate, and urea peroxide, etc. A strong chemiluminescent signal was emitted in the heterozygous genotype while the wild type and .DELTA.F508/.DELTA.F508 genotypes were neg.</p>				
ST	<p>chemiluminescence assay dual enzyme label; alk phosphatase peroxidase label chemiluminescence assay; nucleic acid hybridization dual enzyme label; cystic fibrosis gene mutation chemiluminescence detection; immunoassay chemiluminescence dual enzyme label</p>				
IT	<p>Proteins, general, analysis RL: ARU (Analytical role, unclassified); ANST (Analytical study) (background-suppressing agent; chemiluminescent detection methods using dual enzyme-labeled binding partners)</p>				

- IT **Chemiluminescence** spectroscopy
Cystic fibrosis
Mutation
Nucleic acid hybridization
PCR (polymerase chain reaction)
Southern blot hybridization
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT DNA
RL: AMX (Analytical matrix); ANST (Analytical study)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Gene
RL: ANT (Analyte); ANST (Analytical study)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Antigens
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Peroxides, biological studies
RL: ARG (Analytical reagent use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); RACT (Reactant or reagent); USES (Uses)
(**chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Antibodies
Avidins
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); CAT (Catalyst use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(conjugates, with **enzymes**; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Phenols, biological studies
RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
(enhancer; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Disease, animal
(genetic, recessive; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Genotypes
(heterozygosity, cystic fibrosis gene mutation; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Polyethers, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(hydroxy-contg., background-suppressing agent; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Immunoassay

- (immunoblotting; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Haptens
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(label; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Milk
(nonfat, background-suppressing agent; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Surfactants
(nonionic, background-suppressing agent; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Group IIIA element compounds
RL: ARG (Analytical reagent use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); RACT (Reactant or reagent); USES (Uses)
(perborates; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Immunoassay
(sandwich; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Albumins, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(serum, background-suppressing agent; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Antibodies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(specific **binding partner**; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Recombination, genetic
(translocation; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Polymers, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(water-sol., background-suppressing agent; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Glycoproteins, specific or class
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(.gamma.gp120, of HIV-1; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT Human immunodeficiency virus 1
(.gamma.gp120; **chemiluminescent** detection methods using **dual enzyme-labeled binding partners**)
- IT 134709-72-1 207996-96-1
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(PCR primer; **chemiluminescent** detection methods using **dual enzyme-labeled binding**)

- partners)
 IT 9002-61-3, Human chorionic gonadotropin
 RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 9003-99-0D, Peroxidase, antibody conjugates 9013-20-1D, Streptavidin, enzyme conjugates 9027-41-2D, **Hydrolytic enzymes**, conjugates with anti-hapten antibody
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); CAT (Catalyst use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 9015-85-4, DNA ligase
 RL: ARG (Analytical reagent use); CAT (Catalyst use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 124-43-6 7722-84-1, Hydrogen peroxide, biological studies
 RL: ARG (Analytical reagent use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); RACT (Reactant or reagent); USES (Uses)
 (chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 521-31-3, Luminol 1445-69-8D, hydroxy- or amino-substituted 5336-90-3D, 9-Acridinecarboxylic acid, derivs. 7607-80-9 172834-37-6 172834-40-1
 RL: ARG (Analytical reagent use); RCT (Reactant); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); RACT (Reactant or reagent); USES (Uses)
 (chemiluminescent peroxidase substrate; chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 92-69-3P, p-Phenylphenol 103-90-2P, p-Hydroxyacetanilide 106-41-2P, p-Bromophenol 106-48-9P, p-Chlorophenol 120-83-2P, 2,4-Dichlorophenol 135-19-3P, 2-Naphthol, biological studies 500-85-6P, Phenolindophenol 540-38-5P, p-Iodophenol 939-69-5P, 2-Cyano-6-hydroxybenzothiazole 2591-17-5P, Luciferin 2975-55-5DP, ring halogenated derivs. 2975-55-5P 7400-08-0P, p-Hydroxycinnamic acid 13599-84-3P, 6-Hydroxybenzothiazole 15231-91-1P, 6-Bromo-2-naphthol 20115-09-7P, Dehydroluciferin 208039-05-8P 208039-06-9P
 RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (enhancer; chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 9003-99-0, Peroxidase 9027-41-2, **Hydrolytic enzymes**
 RL: ARG (Analytical reagent use); CAT (Catalyst use); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (enzyme label; chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 58-85-5, Biotin 1672-46-4, Digoxigenin 2321-07-5, Fluorescein
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
 (hapten label; chemiluminescent detection methods using dual enzyme-labeled binding partners)
- IT 9001-22-3, .beta.-Glucosidase 9001-45-0, .beta.-Glucuronidase

9001-78-9, Alkaline phosphatase 9016-18-6, Carboxyl esterase
9031-11-2, .beta.-Galactosidase
RL: ARG (Analytical reagent use); CAT (Catalyst use); THU (Therapeutic
use); ANST (Analytical study); BIOL (Biological study); USES (Uses)

(**hydrolytic enzyme** label; **chemiluminescent**
detection methods using **dual enzyme-labeled**
binding partners)

IT 207996-94-9D, fluorescein 5'-labeled

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); ANST (Analytical study); BIOL
(Biological study); PROC (Process); USES (Uses)

(labeled probe; **chemiluminescent** detection methods using
dual enzyme-labeled binding
partners)

IT 207996-95-0DP, labeled with digoxigenin-dUTP

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); SPN (Synthetic preparation); ANST
(Analytical study); BIOL (Biological study); PREP (Preparation); PROC
(Process); USES (Uses)

(labeled probe; **chemiluminescent** detection methods using
dual enzyme-labeled binding
partners)

IT 207996-97-2D, 5'-biotin labeled 207996-98-3D, 5'-biotin labeled

207996-99-4D, 5'-digoxigenin labeled 208057-32-3D, 3'-fluorescein

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); THU (Therapeutic use); ANST (Analytical
study); BIOL (Biological study); PROC (Process); USES (Uses)

(labeled probe; **chemiluminescent** detection methods using
dual enzyme-labeled binding
partners)

IT 13095-41-5, 2-Naphthyl phosphate 13388-88-0 20056-42-2 24154-09-4

46817-52-1 75966-18-6 108672-78-2 122895-84-5 129058-46-4

137015-67-9 207920-67-0 207920-68-1 207920-68-1D, ring halogenated
derivs. 207920-69-2 207920-70-5 207920-71-6 208039-07-0
208039-08-1

RL: ARG (Analytical reagent use); RCT (Reactant); THU (Therapeutic use);
ANST (Analytical study); BIOL (Biological study); RACT (Reactant or
reagent); USES (Uses)

(protected enhancer; **chemiluminescent** detection methods using
dual enzyme-labeled binding
partners)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Akhavan-Tafti; US 5491072 A 1996 HCAPLUS

(2) Akhavan-Tafti; US 5686258 A 1997 HCAPLUS

(3) Kricka; US 5306621 A 1994 HCAPLUS

L61 ANSWER 15 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1998:157379 HCAPLUS

DN 128:215255

TI Preparation of acridan analogs for kits producing **light** in
chemiluminescence assay

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; Desilva, Renuka

PA Lumigen, Inc., USA

SO U.S., 19 pp., Cont.-in-part of U.S. Ser. No. 300,462, abandoned.

CODEN: USXXAM

DT Patent

LA English

IC ICM G01N033-535

NCL 435006000

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 27

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5723295	A	19980303	US 1996-644088	19960509 <--
	US 5491072	A	19960213	US 1993-61810	19930517 <--
	US 5593845	A	19970114	US 1994-205093	19940302 <--
	US 5523212	A	19960604	US 1994-228290	19940415 <--
	JP 08500125	T2	19960109	JP 1994-525766	19940516 <--
	JP 3231777	B2	20011126		
	AU 9944594	A1	19991111	AU 1999-44594	19990819 <--
	AU 733635	B2	20010517		
PRAI	US 1993-61810	A2	19930517 <--		
	US 1994-205093	A2	19940302 <--		
	US 1994-228290	A2	19940415 <--		
	US 1994-300462	B2	19940902 <--		
	WO 1994-US5437	W	19940516 <--		
	AU 1995-34619	A3	19950830 <--		
OS	MARPAT 128:215255				
AB	<p>A chemiluminescence assay method, compns., kits and chemiluminescent acridan compds. are described which use a 2-step chemiluminescent reaction process. The reaction involves an acridan compd., preferably a deriv. of an N-alkylacridan-9-carboxylic acid, which undergoes a reaction with a peroxide compd., a peroxidase enzyme and an enhancer under conditions of time, temp. and pH which permit the accumulation of an intermediate compd., which is subsequently induced to produce a burst of light by raising the pH. The result is generation of very high intensity light from the reaction. The peroxidase enzyme is present alone or linked to a member of a specific binding pair in an immunoassay, DNA probe assay or other assay where the hydrolytic enzyme is bound to a reporter mol. The method is particularly amenable to automated assays because of the sepn. of the incubation and light generating steps. Thus, 2',3',6'-trifluorohenyl 4-chloro-3-methoxy-10-methylacridan-9-carboxylate was prepd. from 3-methoxyacridinecarboxylic acid by a series of reactions.</p>				
ST	acridan analog chemiluminescence assay prepn; DNA detection chemiluminescence acridan analog prepn				
IT	<p>Immunoassay RL: ANT (Analyte); ANST (Analytical study) (chemiluminescence; prepn. of acridan analogs for kits producing light in chemiluminescence assay)</p>				
IT	<p>Antibodies Antigens DNA Haptens Nucleic acid hybridization RL: ANT (Analyte); ANST (Analytical study) (prepn. of acridan analogs for kits producing light in chemiluminescence assay)</p>				
IT	<p>Nucleic acids RL: ANT (Analyte); ANST (Analytical study) (prepn. of acridan analogs for kits producing light in chemiluminescence assay)</p>				
IT	<p>9003-99-0, Peroxidase RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (horseradish; prepn. of acridan analogs for kits producing light in chemiluminescence assay)</p>				
IT	<p>177535-21-6DP, dichlorinated 177535-21-6P 177535-23-8P 177535-24-9P 177535-25-0P 197156-16-4P 197156-17-5P 197156-18-6P 197156-19-7P 197156-20-0P RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses) (prepn. of acridan analogs for kits producing light in chemiluminescence assay)</p>				

IT 177535-43-2P 177535-46-5P
 RL: BYP (Byproduct); PREP (Preparation)
 (prepn. of acridan analogs for kits producing light in
chemiluminescence assay)

IT 95-78-3 101-16-6 101-17-7 102-56-7 371-42-6 1205-64-7
 2398-37-0 50868-72-9 92248-06-1 113798-74-6 172834-71-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of acridan analogs for kits producing light in
chemiluminescence assay)

IT 2050-44-4P 3467-59-2P 32446-14-3P 33264-65-2P 42595-25-5P
 50868-75-2P 130266-60-3P 154471-37-1P 177535-32-9P 177535-34-1P
 177535-37-4P 177535-39-6P 177535-40-9P 177535-41-0P 177535-42-1P
 177535-44-3P 177535-45-4P 197156-21-1P 197156-22-2P 197156-23-3P
 197156-24-4P 197156-25-5P 197156-26-6P 197156-27-7P 197156-28-8P
 197156-29-9P 197156-30-2P 197156-31-3P 197156-32-4P 197156-33-5P
 197156-34-6P 204326-59-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of acridan analogs for kits producing light in
chemiluminescence assay)

L61 ANSWER 16 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:735880 HCAPLUS

DN 128:11617

TI **Chemiluminescent** detection of **hydrolytic**
enzymes using an acridan

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; DeSilva, Renuka

PA Lumigen, Inc., USA

SO U.S., 10 pp., Cont.-in-part of U.S. Ser. No. 205,093.

CODEN: USXXAM

DT Patent

LA English

IC ICM G01N033-535

NCL 435007910

CC **9-5 (Biochemical Methods)**

Section cross-reference(s): 3, 7

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5686258	A	19971111	US 1994-300367	19940902 <--
	US 5491072	A	19960213	US 1993-61810	19930517 <--
	US 5593845	A	19970114	US 1994-205093	19940302 <--
	US 5523212	A	19960604	US 1994-228290	19940415 <--
	JP 08500125	T2	19960109	JP 1994-525766	19940516 <--
	JP 3231777	B2	20011126		
	CA 2197668	AA	19960314	CA 1995-2197668	19950830 <--
	WO 9607911	A1	19960314	WO 1995-US10952	19950830 <--
	W: AU, CA, CN, FI, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	AU 9535411	A1	19960327	AU 1995-35411	19950830 <--
	AU 707682	B2	19990715		
	EP 778947	A1	19970618	EP 1995-932341	19950830 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, SE				
	JP 10505495	T2	19980602	JP 1995-509550	19950830 <--
	US 5843666	A	19981201	US 1996-749595	19961115 <--
PRAI	US 1993-61810	A2	19930517	<--	
	US 1994-205093	A2	19940302	<--	
	US 1994-228290	A2	19940415	<--	
	WO 1994-US5437	W	19940516	<--	
	US 1994-300367	A	19940902	<--	
	WO 1995-US10952	W	19950830	<--	

AB A **chemiluminescent** assay method, compns., and kits are described
 which use a protected phenolic enhancer compd. which is deprotected by a

hydrolytic enzyme and then enhances a **chemiluminescent** reaction. The reaction involves an acridan compd., preferably a deriv. of an N-alkyl acridan-9-carboxylic acid, which is activated to produce **light** by a peroxide compd. and a peroxidase **enzyme** in the presence of the deprotected enhancer. The result is enhanced generation of **light** from the reaction. The **hydrolytic enzyme** is present alone or linked to a member of a specific **binding pair** in an immunoassay, DNA probe assay, or other assay where the **hydrolytic enzyme** is bound to a reporter mol.

- ST **hydrolytic enzyme** detection **chemiluminescence**
acridan; peroxidase **chemiluminescence** assay hydrolase detection
- IT Immunoassay
(**chemiluminescence**; **hydrolytic enzymes**
detection by **chemiluminescence** using acridan compd.)
- IT Biochemical molecules
(hydrolase conjugates; **hydrolytic enzymes** detection
by **chemiluminescence** using acridan compd.)
- IT Antibodies
Antigens
Haptens
Nucleic acids
Oligonucleotides
Proteins, general, analysis
RL: ANT (Analyte); ANST (Analytical study)
(hydrolase conjugates; **hydrolytic enzymes** detection
by **chemiluminescence** using acridan compd.)
- IT **Chemiluminescence** spectroscopy
DNA sequence analysis
Nucleic acid hybridization
Southern blot hybridization
Test kits
(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT DNA
Peroxides, analysis
Proteins, general, analysis
RL: ANT (Analyte); ANST (Analytical study)
(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT Immunoassay
(immunoblotting; **hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT 9001-78-9D, conjugates 9027-41-2, Hydrolase 9027-41-2D, Hydrolase,
conjugates 9031-11-2, .beta.-Galactosidase
RL: ANT (Analyte); ANST (Analytical study)
(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT 92-81-9D, Acridan, derivs. 9003-99-0, Peroxidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT 172834-40-1P 197156-36-8DP, N-alkyl, derivs.
RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); SPN (Synthetic preparation); ANST
(Analytical study); BIOL (Biological study); PREP (Preparation); PROC
(Process); USES (Uses)
(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)
- IT 75-36-5, Acetyl chloride 92-69-3, p-Phenylphenol 333-27-7 540-38-5,
p-Iodophenol 5336-90-3, Acridine 9-carboxylic acid 10025-87-3,
Phosphoric trichloride 19285-38-2 113798-74-6, 2,3,6-Trifluorophenol
172834-71-8, 3-Methoxyacridine-9-carboxylic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)

IT 101685-91-0P 172834-37-6P 172834-61-6P 172834-67-2P 172834-72-9P
199105-41-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)

IT 148-86-7P, p-Phenylphenol acetate 34261-83-1P 101686-07-1P
137015-68-0P 145874-99-3P

RL: SPN (Synthetic preparation); PREP (Preparation)

(**hydrolytic enzymes** detection by
chemiluminescence using acridan compd.)

L61 ANSWER 17 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:636220 HCAPLUS

DN 127:305048

TI Acridan compounds

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; Desilva, Renuka

PA Lumigen, Inc., USA

SO U.S., 18 pp., Cont.-in-part of U.S. Ser. No. 300,462.

CODEN: USXXAM

DT Patent

LA English

IC ICM C07D285-38

ICS C07D295-00; G01N033-533; G01N033-532

NCL 546103000

CC 9-14 (Biochemical Methods)

Section cross-reference(s): 3, 15, 27, 80

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5670644	A	19970923	US 1996-647383	19960509 <--
	US 5491072	A	19960213	US 1993-61810	19930517 <--
	US 5593845	A	19970114	US 1994-205093	19940302 <--
	US 5523212	A	19960604	US 1994-228290	19940415 <--
	JP 08500125	T2	19960109	JP 1994-525766	19940516 <--
	JP 3231777	B2	20011126		
	AU 9944594	A1	19991111	AU 1999-44594	19990819 <--
	AU 733635	B2	20010517		
PRAI	US 1993-61810	A2	19930517	<--	
	US 1994-205093	A2	19940302	<--	
	US 1994-228290	A2	19940415	<--	
	US 1994-300462	A2	19940902	<--	
	WO 1994-US5437	W	19940516	<--	
	AU 1995-34619	A3	19950830	<--	

OS MARPAT 127:305048

AB A **chemiluminescent** assay method, compns., kits, and
chemiluminescent acridan compds. are described which use a 2-step
chemiluminescent reaction process. The reaction involves an
acridan compd., preferably a deriv. of an N-alkyl acridan-9-carboxylic
acid, which undergoes a reaction with a peroxide compd., a peroxidase
enzyme, and an enhancer under conditions of time, temp., and pH
which permit the accumulation of an intermediate compd., which is
subsequently induced to produce a burst of **light** by raising the
pH. The result is generation of very-high-intensity **light** from
the reaction. The peroxidase **enzyme** is present alone or linked
to a member of a specific **binding pair** in an
immunoassay, DNA probe assay, or other assay where the **hydrolytic**
enzyme is bound to a reporter mol. The method is particularly
amenable to automated assays because of the sepn. of the incubation and
light-generating steps.

ST acridan compd prepn **chemiluminescence enzymic** assay;
 peroxidase detn alkyl acridancarboxylate **chemiluminescence**

IT **Chemiluminescence** spectroscopy
 Nucleic acid hybridization
 Test kits
 (acridan compds. prepn. for **chemiluminescence** assays)

IT Antibodies
 Antigens
 DNA
 Haptens
 Nucleic acids
 Proteins, general, analysis
 RNA
 RL: ANT (Analyte); ANST (Analytical study)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT Peroxides, reactions
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
 RACT (Reactant or reagent); USES (Uses)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT Onium compounds
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
 (Analytical study); PREP (Preparation); USES (Uses)
 (acridinium; acridan compds. prepn. for **chemiluminescence**
 assays)

IT Surfactants
 (anionic; acridan compds. prepn. for **chemiluminescence**
 assays)

IT Immunoassay
 (**chemiluminescence**; acridan compds. prepn. for
chemiluminescence assays)

IT Immunoassay
 (**enzyme**; acridan compds. prepn. for **chemiluminescence**
 assays)

IT Surfactants
 (nonionic; acridan compds. prepn. for **chemiluminescence**
 assays)

IT 9035-73-8, Oxidase 9035-82-9, Dehydrogenase
 RL: ANT (Analyte); ANST (Analytical study)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT 9003-99-0, Peroxidase
 RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study);
 USES (Uses)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT 106-41-2, p-Bromophenol 124-43-6 135-19-3, 2-Naphthol, uses
 540-38-5, p-Iodophenol 719-54-0, N-Methylacridone 5122-99-6,
 4-Iodophenylboronic acid 7400-08-0, p-Hydroxycinnamic acid 7632-04-4,
 Sodium perborate 7722-84-1, Hydrogen peroxide, uses 15231-91-1,
 6-Bromo-2-naphthol 130897-36-8 172834-33-2 172834-43-4
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT 92-81-9DP, Acridan, derivs. 177535-21-6P 177535-23-8P 177535-24-9P
 177535-25-0P 197156-16-4P 197156-17-5P 197156-18-6P 197156-19-7P
 197156-20-0P 197156-35-7P 197156-36-8DP, N-alkyl 197256-32-9P
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
 (Analytical study); PREP (Preparation); USES (Uses)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT 60-00-4, EDTA, analysis
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (acridan compds. prepn. for **chemiluminescence** assays)

IT 79-37-8, Oxalyl chloride 95-78-3, 2,5-Dimethylaniline 98-59-9,
 p-Toluenesulfonyl chloride 101-16-6, 3-Methoxydiphenylamine 101-17-7,
 3-Chlorodiphenylamine 102-56-7, 2,5-Dimethoxyaniline 108-95-2, Phenol,
 reactions 333-27-7, Methyl triflate 371-42-6, 4-Fluorothiophenol

1205-64-7, 3-Methyldiphenylamine 2398-37-0, 3-Bromoanisole 3467-59-2
33264-65-2 50868-72-9, 5-Methoxy-2-methylaniline 92248-06-1,
Bis(3-methoxyphenyl)amine 113798-74-6, 2,3,6-Trifluorophenol
RL: RCT (Reactant); RACT (Reactant or reagent)

(acridan compds. prepn. for **chemiluminescence** assays)

IT 2050-44-4P, 2,5-Dimethylacetanilide 32446-14-3P 42595-25-5P,
3-Chloroacridine-9-carboxylic acid 50868-75-2P 130266-60-3P,
3-Methylacridine-9-carboxylic acid 154471-37-1P, 1-Methylacridine-9-
carboxylic acid 172834-71-8P 177535-29-4P 177535-32-9P
177535-33-0P 177535-37-4P 177535-38-5P 177535-40-9P 177535-41-0P
177535-42-1P 177535-44-3P 177535-45-4P 178920-79-1P 197156-21-1P
197156-22-2P 197156-23-3P 197156-24-4P 197156-25-5P 197156-26-6P
197156-27-7P 197156-28-8P 197156-29-9P 197156-30-2P 197156-31-3P
197156-32-4P 197156-33-5P 197156-34-6P 197256-33-0P 197256-34-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(acridan compds. prepn. for **chemiluminescence** assays)

IT 172834-72-9P 177535-43-2P 177535-46-5P
RL: SPN (Synthetic preparation); PREP (Preparation)

(acridan compds. prepn. for **chemiluminescence** assays)

L61 ANSWER 18 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:444140 HCAPLUS

DN 125:81269

TI **Chemiluminescent** dialkyl-substituted 1,2-dioxetane compounds,
methods of synthesis and use

IN Schaap, Arthur Paul; Akhavan-Tafti, Hashem

PA Lumigen, Inc., USA

SO PCT Int. Appl., 82 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C09K003-00

ICS C12Q001-00; C07F009-06; C07D305-00; C07C069-76; C07C069-00;
C07C041-00

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 3, 15, 28

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	WO 9616137	A1	19960530	WO 1995-US14193	19951102 <--
	W: AU, CA, CN, FI, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5578253	A	19961126	US 1994-344124	19941123 <--
	CA 2203160	AA	19960530	CA 1995-2203160	19951102 <--
	AU 9641419	A1	19960617	AU 1996-41419	19951102 <--
	AU 684409	B2	19971211		
	EP 794987	A1	19970917	EP 1995-939701	19951102 <--
	EP 794987	B1	20020925		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
	JP 10509456	T2	19980914	JP 1995-516892	19951102 <--
	AT 224938	E	20021015	AT 1995-939701	19951102 <--
	US 5886238	A	19990323	US 1996-704074	19960828 <--
	AU 9736771	A1	19971211	AU 1997-36771	19970902 <--
	AU 724148	B2	20000914		
	AU 9736770	A1	19980122	AU 1997-36770	19970902 <--
	AU 700925	B2	19990114		
	US 5892064	A	19990406	US 1997-978800	19971126 <--
	US 6284899	B1	20010904	US 1997-999930	19971128 <--
PRAI	US 1994-344124	A	19941123	<--	
	WO 1995-US14193	W	19951102	<--	
	US 1996-703973	B1	19960828	<--	
OS	MARPAT 125:81269				

- AB A **chemiluminescent** assay method and compns. are described which use a dialkyl-substituted dioxetane which is deprotected to trigger a **chemiluminescent** reaction. **Chemiluminescent** 1,2-dioxetane compds. substituted on the dioxetane ring with 2 nonspirofused alkyl groups which can be triggered by a reagent to generate **light** are disclosed. Dialkyl-substituted dioxetanes are useful for the detection of triggering agents including **enzymes**. The **enzyme** may be present alone or linked to a member of a specific **binding pair** in an immunoassay, DNA probe assay, or other assay where the **enzyme** is bound to a reporter mol.
- ST **chemiluminescence** assay dialkyl substituted dioxetane synthesis; immunoassay **chemiluminescence** dialkyl substituted dioxetane
- IT **Fluorescence**
Luminescence, chemi-
Nucleic acid hybridization
Polymer-supported reagents
Surfactants
(**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Antibodies
Antigens
Deoxyribonucleic acids
Haptens
Nucleic acids
RL: ANT (Analyte); ANST (Analytical study)
(**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT **Enzymes**
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Alkali metals, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Polymers, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(polyvinylbenzyltrialkylphosphonium group-contg.; **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Genetic methods
(DNA fingerprinting, **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Immunoassay
Spectrochemical analysis
(**chemiluminescence**, **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Immunoassay
(immunoblotting, **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Nucleotides, analysis
RL: ANT (Analyte); ANST (Analytical study)
(oligo-, **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Quaternary ammonium compounds, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(polymers, surfactants; **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)
- IT Quaternary ammonium compounds, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(tetraalkyl, alkoxides, **chemiluminescent** dialkyl-substituted 1,2-dioxetane compds. synthesis and anal. use)

- IT Quaternary ammonium compounds, uses
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (tetraalkyl, hydroxides, **chemiluminescent** dialkyl-substituted
 1,2-dioxetane compds. synthesis and anal. use)
- IT 9001-78-9
 RL: ANT (Analyte); ANST (Analytical study)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 302-01-2, Hydrazine, uses 429-41-4, Tetra-n-butylammonium fluoride
 1310-58-3, Potassium hydroxide, uses 16984-48-8, Fluoride, uses
 26628-22-8, Sodium azide 151346-37-1 151346-38-2 178804-82-5
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 6788-84-7DP, 1,2-Dioxetane, derivs. 111807-83-1P 124951-96-8P
 163342-81-2P 163396-60-9P 172024-15-6P 178804-63-2P 178804-65-4P
 178804-67-6P 178804-69-8P 178804-72-3P 178804-74-5P 178804-76-7P
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
 (Analytical study); PREP (Preparation); USES (Uses)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 67-68-5, DMSO, analysis 68-12-2, DMF, analysis 75-05-8, Acetonitrile,
 analysis 123-91-1, p-Dioxane, analysis
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 133914-83-7
 RL: PRP (Properties)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 61-73-4, Methylene blue 75-36-5, Acetyl chloride 98-88-4, Benzoyl
 chloride 109-78-4, 2-Cyanoethanol 119-60-8, Dicyclohexyl ketone
 565-80-0 623-25-6, .alpha.,.alpha.'-Dichloro-p-xylene 998-40-3,
 Tri-n-butylphosphine 1121-37-5, Dicyclopropyl ketone 3282-30-2,
 Pivaloyl chloride 4731-53-7, Tri-n-octylphosphine 10025-87-3,
 Phosphorus oxychloride 11121-48-5, Rose bengal 120687-94-7, Methyl
 3-tert-butyltrimethylsilyloxybenzoate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)
- IT 163342-74-3P 163396-56-3P 172024-42-9P 178804-52-9P 178804-53-0P
 178804-54-1P 178804-56-3P 178804-58-5P 178804-60-9P 178804-61-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (**chemiluminescent** dialkyl-substituted 1,2-dioxetane compds.
 synthesis and anal. use)

L61 ANSWER 19 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:350342 HCAPLUS

DN 125:29590

TI **Chemiluminescent** assay utilizing an acridan and peroxidase

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; Desilva, Renuka

PA Lumigen, Inc., USA

SO PCT Int. Appl., 52 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G01N033-535

ICS C07D219-04

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 27

FAN.CNT 12

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

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PI  WO 9607912      A1  19960314      WO 1995-US11031  19950830 <--
    W: AU, CA, CN, FI, JP, KR
    RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
    CA 2197669      AA  19960314      CA 1995-2197669  19950830 <--
    AU 9534619      A1  19960327      AU 1995-34619    19950830 <--
    EP 778946       A1  19970618      EP 1995-931030   19950830 <--
    EP 778946       B1  20021023
    R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, SE
    CN 1161083      A   19971001      CN 1995-195266   19950830 <--
    JP 10508191     T2  19980818      JP 1995-509567   19950830 <--
    AT 226728       E   20021115      AT 1995-931030   19950830 <--
    AU 9944594      A1  19991111      AU 1999-44594    19990819 <--
    AU 733635       B2  20010517
PRAI US 1994-300462 A   19940902 <--
    AU 1995-34619   A3  19950830 <--
    WO 1995-US11031 W   19950830 <--
OS  MARPAT 125:29590
AB  A chemiluminescent assay method utilizes a 2-step
    chemiluminescent reaction involving an acridan prepd. by using
    std. reactions. In particular, a N-alkylacridan-9-carboxylic acid deriv.
    undergoes a reaction with a peroxide compd., a peroxidase enzyme
    and an enhancer, which permit the accumulation of an intermediate which is
    subsequently induced to produce a burst of light by raising the
    pH. The result is a generation of very high intensity light
    from the reaction. The peroxidase enzyme is present alone or
    linked to a member of a specific binding pair in an
    immunoassay, DNA probe assay or other assay where the hydrolytic
enzyme is bound to a reporter mol. The method is particularly
    amenable to automated assay because of the sepn. of the incubation and
    light generating steps.
ST  acridan peroxidase peroxide chemiluminescence prepn
IT  Spectrochemical analysis
    (chemiluminescence, chemiluminescent assay
    utilizing acridan compd. and peroxidase)
IT  106-41-2, p-Bromophenol 124-43-6, Urea peroxide 135-19-3, 2-Naphthol,
    uses 540-38-5, p-Iodophenol 5122-99-6, 4-Iodophenylboronic acid
    7400-08-0, p-Hydroxycinnamic acid 7722-84-1, Hydrogen peroxide, uses
    9003-99-0, Peroxidase 15231-91-1, 6-Bromo-2-naphthol
    RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
    (chemiluminescent assay utilizing acridan compd. and
    peroxidase)
IT  172834-40-1P 177535-19-2P 177535-20-5P 177535-21-6P 177535-22-7P
    177535-23-8P 177535-24-9P 177535-25-0P
    RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic
    preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant
    or reagent); USES (Uses)
    (chemiluminescent assay utilizing acridan compd. and
    peroxidase)
IT  101-16-6, 3-Methoxydiphenylamine 371-42-6, 4-Fluorothiophenol
    42595-25-5 113798-74-6, 2,3,6-Trifluorophenol 130266-60-3
    154471-37-1 173407-17-5 177535-30-7 177535-31-8 177535-42-1
    RL: RCT (Reactant); RACT (Reactant or reagent)
    (chemiluminescent assay utilizing acridan compd. and
    peroxidase)
IT  172834-54-7P 172834-70-7P 172834-71-8P 172834-72-9P 177535-26-1P
    177535-27-2P 177535-28-3P 177535-29-4P 177535-32-9P 177535-34-1P
    177535-35-2P 177535-36-3P 177535-37-4P 177535-39-6P 177535-40-9P
    177535-41-0P 177535-43-2P 177535-44-3P 177535-45-4P 177535-46-5P
    RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
    (Reactant or reagent)
    (chemiluminescent assay utilizing acridan compd. and
    peroxidase)

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L61 ANSWER 20 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1996:350341 HCAPLUS

DN 125:29589

TI **Chemiluminescent** detection of **hydrolytic enzymes** using an acridan

IN Akhavan-Tafti, Hashem; Arghavani, Zahra; Desilva, Renuka

PA Lumigen, Inc., USA

SO PCT Int. Appl., 43 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G01N033-535

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 7, 27

FAN.CNT 12

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 9607911	A1	19960314	WO 1995-US10952	19950830	<--
	W: AU, CA, CN, FI, JP, KR					
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE					
	US 5686258	A	19971111	US 1994-300367	19940902	<--
	AU 9535411	A1	19960327	AU 1995-35411	19950830	<--
	AU 707682	B2	19990715			
	EP 778947	A1	19970618	EP 1995-932341	19950830	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, SE					
	JP 10505495	T2	19980602	JP 1995-509550	19950830	<--
PRAI	US 1994-300367	A	19940902			<--
	US 1993-61810	A2	19930517			<--
	US 1994-205093	A2	19940302			<--
	US 1994-228290	A2	19940415			<--
	WO 1995-US10952	W	19950830			<--

OS MARPAT 125:29589

AB A **chemiluminescent** assay method, compns. and kits are described which use a protected phenolic enhancer which is deprotected by a **hydrolytic enzyme** and then enhances a **chemiluminescent** reaction. The reaction involves an acridan, preferably a N-alkyl-acridan-9-carboxylic acid deriv., which is prepd. and activated to produce **light** by a peroxide and a peroxidase **enzyme** in the presence of the deprotected enhancer. The result is enhanced generation of **light** from the reaction. The **hydrolytic enzyme** is present alone or linked to a member of a specific **binding pair** in an immunoassay, DNA probe assay or other assay where the **hydrolytic enzyme** is bound to a reporter mol.

ST **chemiluminescence** detection **hydrolytic enzyme** acridan prepn

IT Immunoassay

(**chemiluminescent** detection of **hydrolytic enzymes** using acridan)

IT Antibodies

Antigens

Haptens

RL: ARU (Analytical role, unclassified); ANST (Analytical study)

(**chemiluminescent** detection of **hydrolytic enzymes** using acridan)

IT Spectrochemical analysis

(**chemiluminescence**, **chemiluminescent** detection of **hydrolytic enzymes** using acridan)

IT Nucleotides, analysis

RL: ARU (Analytical role, unclassified); ANST (Analytical study)

(oligo-, **chemiluminescent** detection of **hydrolytic enzymes** using acridan)

IT 9001-78-9, Alkaline phosphatase 9027-41-2, **Hydrolytic enzymes** 9031-11-2, .beta.-Galactosidase
 RL: ANT (Analyte); ANST (Analytical study)
 (chemiluminescent detection of hydrolytic enzymes using acridan)

IT 9003-99-0, Peroxidase
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
 RACT (Reactant or reagent); USES (Uses)
 (chemiluminescent detection of hydrolytic enzymes using acridan)

IT 148-86-7P 34261-83-1P 137015-68-0P 145874-99-3P 145875-00-9P
 172834-37-6P 172834-40-1P
 RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (chemiluminescent detection of hydrolytic enzymes using acridan)

IT 92-69-3, p-Phenylphenol 101-16-6, 3-Methoxydiphenylamine 540-38-5,
 p-Iodophenol 3068-32-4 5336-90-3, 9-Acridinecarboxylic acid
 113798-74-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chemiluminescent detection of hydrolytic enzymes using acridan)

IT 172834-54-7P 172834-61-6P 172834-67-2P 172834-70-7P 172834-71-8P
 172834-72-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (chemiluminescent detection of hydrolytic enzymes using acridan)

L61 ANSWER 21 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1993:76602 HCAPLUS

DN 118:76602

TI **Chemiluminescent** method and compositions using protected enhancer compounds

IN Akhavan-Tafti, M. Hashem

PA Lumigen, Inc., USA

SO Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM G01N021-76

ICS C12Q001-28; C12Q001-34; C12Q001-68; G01N033-53; C12Q001-42;
 C12Q001-44; G01N033-58

ICA G01N033-535; G01N033-68

CC 9-5 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 516948	A1	19921209	EP 1992-106544	19920415 <--
	EP 516948	B1	20000531		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, MC, NL, PT, SE				
	CA 2061189	AA	19921125	CA 1992-2061189	19920213 <--
	AU 9214769	A1	19921203	AU 1992-14769	19920409 <--
	AU 656572	B2	19950209		
	JP 05115300	A2	19930514	JP 1992-94537	19920414 <--
	JP 07073515	B4	19950809		
	AT 193602	E	20000615	AT 1992-106544	19920415 <--
	CN 1067257	A	19921223	CN 1992-103938	19920521 <--
PRAI	US 1991-705322	A	19910524	<--	
OS	MARPAT 118:76602				
AB	A chemiluminescent method uses a protected enhancer which is triggered by a hydrolytic enzyme and then enhances a				

chemiluminescent reaction. The protected enhancer has a formula of ArOX wherein X is a leaving group which is reactive with the **hydrolytic enzyme** and Ar is a non-interfering arom. group which can contain C; O; S or N in the ring. The **chemiluminescent** reaction involves an amino substituted acylhydrazide which is activated to produce **light** by a peroxide and a peroxidase in the presence of the activated enhancer. The result is enhanced generation of **light** from the reaction. The **hydrolytic enzyme** is present alone or as a label in an immunoassay, DNA probe assay, or other assay wherein the **hydrolytic enzyme** is bound to a reporter mol. Human transferrin was measured by Western blot using alk. phosphatase-antibody conjugate, H₂O₂, luminol, p-phenylphosphate, horseradish peroxidase-IgG. The assay allowed the measurement of 500 fg transferrin/slot.

- ST **chemiluminescence** assay protected enhancer hydrolase; phenol
- protected enhancer **chemiluminescence** assay
- IT Surfactants
- Proteins, uses
- RL: USES (Uses)
- (as suppressing agent in **chemiluminescence** assay using **hydrolytic enzyme** and protected enhancer)
- IT Nucleic acid hybridization
- (**chemiluminescence** assay, **hydrolytic enzyme** and protected enhancer in)
- IT Antibodies
- Antigens
- Nucleic acids
- RL: ANST (Analytical study)
- (conjugates with **hydrolytic enzyme**, in **chemiluminescent** assay using protected enhancer compds.)
- IT Transferrins
- RL: ANST (Analytical study)
- (detn. of human, by Western blot, **chemiluminescence** with alk. phosphatase-antibody conjugate and phenylphenol phosphate as protected enhancer in)
- IT Hydrazides
- RL: ANST (Analytical study)
- (acyl, amino-substituted, in **chemiluminescent** assay using protected enhancer compds.)
- IT Chemical compounds
- RL: ANST (Analytical study)
- (biol., conjugates with **hydrolytic enzyme**, in **chemiluminescent** assay using protected enhancer compds.)
- IT Spectrochemical analysis
- (**chemiluminescence**, **hydrolytic enzyme** and protected enhancer in)
- IT Immunoassay
- (**chemiluminescence enzyme**, **hydrolytic enzyme** and protected enhancer in)
- IT Peroxides, compounds
- RL: ANST (Analytical study)
- (compds., in **chemiluminescent** assay using protected enhancer)
- IT Immunoassay
- (immunoblotting, transferrin of human detn. by, **chemiluminescence** with alk. phosphatase-antibody conjugate and phenylphenol phosphate as protected enhancer in)
- IT 46817-52-1, p-Phenylphenol phosphate 137015-67-9
- RL: ANST (Analytical study)
- (as protected enhancer in **chemiluminescence** assay for alk. phosphatase detection)
- IT 9001-78-9, Alkaline phosphatase 9013-79-0, Esterase 9027-41-2, Hydrolase 9031-11-2, .beta.-Galactosidase
- RL: ANT (Analyte); ANST (Analytical study)

- (detection of, by **chemiluminescent** assay, protected enhancer activation in)
- IT 9027-41-2D, Hydrolase, conjugates
RL: ANT (Analyte); ANST (Analytical study)
(detection of, in **chemiluminescent** assay, protected enhancer activation in)
- IT 521-31-3, Luminol 7722-84-1, Hydrogen peroxide, uses
RL: ANST (Analytical study)
(in **chemiluminescence** assay for alk. phosphatase detection using phenylphenol phosphate as protected enhancer)
- IT 9003-99-0, Peroxidase
RL: ANST (Analytical study)
(in **chemiluminescent** assay using protected enhancer compds.)
- IT 9001-78-9D, antibodies conjugates
RL: ANST (Analytical study)
(in transferrins of human detn. by Western blot and **chemiluminescence** using phenylphenol phosphate as protected enhancer)
- IT 148-86-7P, p-Phenylphenol acetate 34261-83-1P, p-Phenylphenol phosphate, disodium salt 137015-68-0P, p-Iodophenylphosphate, disodium salt 145874-99-3P, p-Iodophenyl-.beta.-galactopyranoside 145875-00-9P, p-Phenylphenol-.beta.-galactopyranoside
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, as protected enhancer for **chemiluminescence** assay for **hydrolytic enzyme**)
- IT 92-69-3, p-Phenylphenol 540-38-5, p-Iodophenol
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, for prepg. protected enhancer for **chemiluminescence** assay for **hydrolytic enzyme**)
- IT 3068-32-4, Acetobromogalactose
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with iodophenol, for protected enhancer prepn. for **chemiluminescence** assay for **hydrolytic enzyme**)

L61 ANSWER 22 OF 23 HCAPLUS COPYRIGHT 2003 ACS

AN 1987:172474 HCAPLUS

DN 106:172474

TI **Chemiluminescence** prolonged with nitrogen compounds for use in immunoassays, nucleotide probes, and test kits, and a device

IN Dattagupta, Nanibhushan; Clemens, Anton H.

PA Molecular Diagnostics, Inc., USA

SO Eur. Pat. Appl., 100 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM G01N033-52

ICS G01N033-53; C12Q001-68

ICA G01N033-58; C12Q001-66

CC 9-5 (Biochemical Methods)

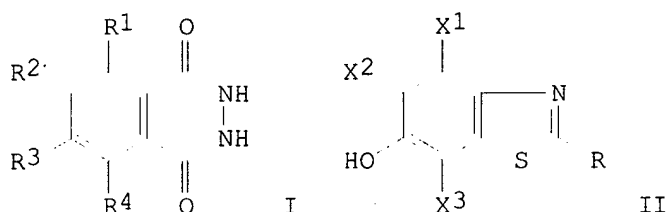
Section cross-reference(s): 7, 15, 28

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 210449	A2	19870204	EP 1986-108890	19860630 <--
	EP 210449	A3	19870902		
	EP 210449	B1	19930728		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	US 4794073	A	19881227	US 1985-753734	19850710 <--
	US 4853327	A	19890801	US 1985-753739	19850710 <--
	CA 1307480	A1	19920915	CA 1986-511781	19860617 <--
	AU 8659402	A1	19870115	AU 1986-59402	19860630 <--

AU 593806	B2	19900222		
AT 92188	E	19930815	AT 1986-108890	19860630 <--
FI 8602886	A	19870111	FI 1986-2886	19860708 <--
DK 8603268	A	19870111	DK 1986-3268	19860709 <--
ZA 8605115	A	19870527	ZA 1986-5115	19860709 <--
ES 2000660	A6	19880316	ES 1986-220	19860709 <--
JP 62124446	A2	19870605	JP 1986-162929	19860710 <--
JP 2553519	B2	19961113		
US 4950588	A	19900821	US 1988-250985	19880927 <--
PRAI US 1985-753734		19850710	<--	
US 1985-753739		19850710	<--	
US 1985-753749		19850710	<--	
US 1986-840636		19860320	<--	
EP 1986-108890		19860630	<--	

GI



- AB A **chemiluminescence** (CL) process comprises contacting a CL precursor 2,3-dihydro-1,4-phthalazinedione I (R1, R2 = NH2; R1, R2, R3, R4 = H, (un)substituted C1-6 alkyl or alkenyl or alkoxy, OH, CO2H, NH2; R1R2 = (un)substituted amino benzo-group deriv.), an oxidant, and an **enzyme** in the presence of a N compd. (e.g. NH3, water-sol. org. amine) which prolongs the duration and increases the intensity of the **light** emitted. A CL enhancer, phenol derivs. or 6-hydroxybenzothiazoles II (R = H, CN, (un)substituted thiazole; X1, X2, X3 = H, (un)substituted C1-6 alkyl or alkenyl or alkoxy, (un)substituted OH, CO2H, (un)substituted NH2), may also be added. The CL reaction is used in the detection of nucleic acids, antibodies, antigens, and peroxidase and in **light** prodn. Test kits and devices are also disclosed. Adenoviral DNA or pBR322 probe and aminomethyl angelicin (as photoreactive intercalator) were irradiated to form a covalent **complex** which was then reacted with N-hydroxysuccinimidobiotin to form the biotinylated hybridization probe. The probe was used in a dot-blot assay. DNA was detected by CL using streptavidin, biotinylated horseradish peroxidase, luminol and H2O2. Ammonium acetate in the buffer prolonged the CL reaction.
- ST **chemiluminescence** stabilization nitrogen compd nucleotide probe; immunoassay ammonia stabilization **chemiluminescence**; **enzyme** assay amine stabilization **chemiluminescence**; DNA hybridization probe ammonium **chemiluminescence**
- IT Amines, biological studies
RL: BIOL (Biological study)
(**chemiluminescence** stabilization with, nucleotide hybridization probe and other assays)
- IT Antibodies
Antigens
RL: ANT (Analyte); ANST (Analytical study)
(detection of, by ammonia and amine-stabilized **chemiluminescence** assay)
- IT **Enzymes**

- RL: ANST (Analytical study)
(detn. of and use in ammonia and amine-stabilized **chemiluminescence** assay)
- IT Nucleic acid hybridization
(in ammonia and amine-stabilized **chemiluminescence** assay)
- IT Oxidizing agents
(in ammonia and amine-stabilized **chemiluminescence** nucleotide hybridization probe and other assays)
- IT **Luminescence, chemi-**
(stabilization of, with ammonia and amines for nucleotide hybridization probe and other assays)
- IT Amines, biological studies
RL: BIOL (Biological study)
(water-sol., **chemiluminescence** stabilization with, nucleotide hybridization probe and other assays)
- IT Hemoglobins
RL: SPN (Synthetic preparation); PREP (Preparation)
(.beta. chain of, sickle cell anemia-specifying oligonucleotide of, for **chemiluminescence** hybridization probe prepn.)
- IT Immunoglobulins
RL: PROC (Process)
(G, to rubella virus, detection of, of human, by ammonia and amine-stabilized **chemiluminescence** ELISA)
- IT Virus, animal
(adeno-, DNA of, in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT Amines, uses and miscellaneous
RL: BIOL (Biological study)
(aryl, **chemiluminescence** stabilization with, nucleotide hybridization probe and other assays)
- IT Amines, uses and miscellaneous
RL: BIOL (Biological study)
(benzyl, **chemiluminescence** stabilization with, nucleotide hybridization probe and other assays)
- IT Spectrochemical analysis
(**chemiluminescence**, ammonia and amine-stabilized, in nucleotide hybridization probe and other assays)
- IT Nucleotides, polymers
RL: SPN (Synthetic preparation); PREP (Preparation)
(oligo-, conjugates, with deoxyuridine derivs., prepn. of, for **chemiluminescence** hybridization probe assay)
- IT Plasmid and Episome
(pBR322, in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT Amines, uses and miscellaneous
RL: USES (Uses)
(poly-, **chemiluminescence** stabilization with, for nucleotide hybridization probe and other assays)
- IT Deoxyribonucleic acids
RL: SPN (Synthetic preparation); PREP (Preparation)
(reaction products, with angelicin derivs., prepn. of, for ammonia and amine-stabilized **chemiluminescence** hybridization probe assay)
- IT Virus, animal
(rubella, IgG of human to, detection of, by ammonia and amine-stabilized **chemiluminescence** ELISA)
- IT 25769-03-3 53602-90-7 50-89-5, Thymidine, uses and miscellaneous
58-61-7, Adenosine, uses and miscellaneous 65-71-4, Thymine 71-30-7, Cytosine 73-24-5, Adenine, uses and miscellaneous 73-40-5, Guanine 118-00-3, Guanosine, uses and miscellaneous
RL: ANST (Analytical study)
(ammonia and amine-stabilized **chemiluminescence** assay response to)
- IT 521-31-3, Luminol 1445-69-8D, 2,3-Dihydro-1,4-phthalazinedione, derivs.

- RL: ANST (Analytical study)
(ammonia and amine-stabilized **chemiluminescence** in nucleotide hybridization probe and other assays contg., as **chemiluminescence** precursor)
- IT 13599-84-3, 6-Hydroxybenzothiazole
RL: ANST (Analytical study)
(**chemiluminescence** enhanced by ammonia and amine and, in **chemiluminescence** assay)
- IT 2591-17-5, Luciferin
RL: ANST (Analytical study)
(**chemiluminescence** enhanced by ammonium acetate and, in **chemiluminescence** assay)
- IT 92-04-6, 2-Chloro-4-phenylphenol 92-69-3, 4-Phenylphenol 92-88-6
95-77-2, 3,4-Dichlorophenol 98-54-4, 4-tert-Butylphenol 101-53-1,
4-Benzylphenol 106-41-2, 4-Bromophenol 106-44-5, uses and
miscellaneous 106-48-9, 4-Chlorophenol 120-83-2, 2,4-Dichlorophenol
540-38-5, 4-Iodophenol 573-97-7, 1-Bromonaphth-2-ol 637-89-8
831-82-3, 4-Phenoxyphenol 1200-09-5 1634-82-8 1689-82-3,
4-(Phenylazo)phenol 1965-09-9 3558-83-6, 4-(4'-
Hydroxyphenyl)benzophenone 3839-46-1 3964-56-5, 4-Bromo-2-chlorophenol
7400-08-0 13599-84-3D, 6-Hydroxybenzothiazole, derivs. 15015-57-3,
4-Hydroxyphenyldisulfide 15231-91-1, 6-Bromonaphth-2-ol 16239-18-2,
1,6-Dibromonaphth-2-ol 23795-02-0 28166-41-8, .alpha.-Cyano-4-
hydroxycinnamic acid 92681-33-9 135-19-3, uses and miscellaneous
RL: ANST (Analytical study)
(**chemiluminescence** enhancement by ammonia and amines and, for
nucleotide hybridization probe and other assays)
- IT 71-44-3, Spermine 110-60-1 124-20-9, Spermidine 7664-41-7, Ammonia,
uses and miscellaneous
RL: ANST (Analytical study)
(**chemiluminescence** stabilization with, for nucleotide
hybridization probe and other assays)
- IT 616-47-7, 1-Methylimidazole 693-98-1, 2-Methylimidazole 822-36-6,
4-Methylimidazole 288-32-4, Imidazole, uses and miscellaneous 288-94-8
RL: ANST (Analytical study)
(**chemiluminescence** stabilization with, in
chemiluminescence assay)
- IT 71-44-3, Spermine 631-61-8, Ammonium acetate 110-86-1, Pyridine, uses
and miscellaneous 288-32-4, Imidazol, uses and miscellaneous
RL: ANST (Analytical study)
(**chemiluminescence** stabilization with, in nucleotide
hybridization probe assay)
- IT 109-97-7D, Azole, derivs. 7664-41-7D, Ammonia, salts 11084-06-3D,
Thiazine, derivs.
RL: ANST (Analytical study)
(**chemiluminescence** stabilization with, nucleotide
hybridization probe and other assays)
- IT 9013-20-1, Streptavidin 7722-84-1, Hydrogen peroxide, uses and
miscellaneous 9003-99-0, Peroxidase 9003-99-0D, Peroxidase,
biotinylated
RL: ANST (Analytical study)
(in ammonia and amine-stabilized **chemiluminescence** nucleotide
hybridization probe assay)
- IT 107931-42-ODP, oligonucleotide conjugates
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(prepn. and detritylation of, for **chemiluminescence**
hybridization probe assay)
- IT 96102-22-6P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and dimethoxytrityl protection of, for
chemiluminescence nucleotide hybridization probe prepn.)
- IT 96102-25-9P

- RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and protection of, for **chemiluminescence** nucleotide hybridization probe prepn.)
- IT 107931-41-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction of, with DNA, for ammonia and amine-stabilized **chemiluminescence** hybridization probe assay)
- IT 107931-40-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction of, with isoluminol deriv., in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT 106327-87-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction of, with oligonucleotide, for **chemiluminescence** hybridization probe assay)
- IT 80500-62-5DP, reaction products with adenoviral DNA
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction with biotin deriv., in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT 107931-39-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and succinimidation of, in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT 107931-38-4DP, adenoviral DNA conjugates
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, as **chemiluminescence** hybridization probe, amine and ammonia **chemiluminescence** prolongation in relation to)
- IT 107931-41-9DP, DNA conjugates
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, as hybridization probe in ammonia and amine-stabilized **chemiluminescence** assay)
- IT 107945-53-9DP, oligonucleotide conjugates
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, for **chemiluminescence** hybridization probe assay)
- IT 35013-72-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with aminomethyl-angelicin coupled nucleic acids)
- IT 66612-32-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with angelicin deriv., in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)
- IT 383-65-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with chloromercurydeoxyuridine, for **chemiluminescence** nucleotide hybridization probe prepn.)
- IT 65505-76-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with trifluoroacetamidopropene, for **chemiluminescence** nucleotide hybridization probe prepn.)
- IT 80500-62-5, 4'-Aminomethyl-4,5'-dimethylangelicin
RL: PROC (Process)
(succinylation of, in ammonia and amine-stabilized **chemiluminescence** hybridization probe prepn.)

TI Enhanced **chemiluminescent** method for the detection of DNA dot-hybridization assays

AU Matthews, Jayne A.; Batki, Armaiti; Hynds, Catherine; Kricka, Larry J.

CS Dep. Clin. Chem., Queen Elizabeth Med. Cent., Birmingham, B15 2TH, UK

SO Analytical Biochemistry (1985), 151(1), 205-9
CODEN: ANBCA2; ISSN: 0003-2697

DT Journal

LA English

CC 9-10 (Biochemical Methods)

AB A simple enhanced **chemiluminescent** procedure for the quantitation of DNA hybridization to dot blots is described. The method utilizes DNA probes labeled with biotin, which are detected using a biotinylated streptavidin-horseradish peroxidase **complex**. The peroxidase **enzyme** then takes part in an enhanced **chemiluminescent** reaction with luminol, H2O2, and an enhancer for the detection of biotin-streptavidin-horseradish peroxidase **complexes**. The method was demonstrated by using plasmid pBR322 DNA. The method can be used to give quant. results using a photomultiplier tube or qual. results by recording the **light** emission on instant photog. film.

ST DNA hybridization detn biotin **chemiluminescence**; biotin DNA dot hybridization **chemiluminescence**; **chemiluminescence** biotin DNA hybridization

IT Deoxyribonucleic acids
RL: ANST (Analytical study)
(biotin-labeled, dot hybridization of, **enzymic-chemiluminescence** assay for quantitation of)

IT Spectrochemical analysis
(**chemiluminescence**, for dot-hybridized biotin-labeled DNA)

IT Plasmid and Episome
(pBR322, biotin-labeled DNA of, dot hybridization of, **enzymic-chemiluminescence** assay for quantitation of)

IT 58-85-5
RL: ANST (Analytical study)
(DNA labeled with, dot hybridization of, **enzymic-chemiluminescence** assay for quantitation of)

IT 9003-99-0D, reaction products with biotinylated streptavidin
RL: ANST (Analytical study)
(biotin-labeled hybridized DNA detection by)

IT 521-31-3 540-38-5 7400-08-0 7722-84-1, uses and miscellaneous
RL: ANST (Analytical study)
(**chemiluminescence** reagent contg., dot-hybridized biotinylated DNA quantitation by)

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L74 ANSWER 1 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 2001-440093 [47] WPIX

CR 1997-385276 [35]; 1999-618773 [53]; 2000-282679 [24]; 2000-531420 [41];
2001-079299 [64]; 2002-048613 [73]; 2002-060954 [66]

DNC C2001-132884

TI New **chemiluminescent** compositions with a heterocyclic ring group, useful for producing light and in assays for detecting phosphatase enzymes and enzyme inhibitors, and in assays employing enzyme-labeled specific binding partners.

DC A13 A14 A89 B04 D16

IN AKHAVAN-TAFTI, H; ARGHAVANI, Z; DESILVA, R

PA (LUMI-N) LUMIGEN INC

CYC 1

PI US 6218137 B1 20010417 (200147)* 54p C12Q001-42 <--

ADT US 6218137 B1 CIP of US 1996-585090 19960116, CIP of US 1996-683927
19960719, Div ex WO 1997-US15 19970115, Div ex US 1997-894143 19970813, US
2000-540796 20000331

FDT US 6218137 B1 Div ex US 6045727

PRAI US 1997-894143 19970813; US 1996-585090 19960116; US 1996-683927
19960719; WO 1997-US15 19970115; US 2000-540796 20000331

IC ICM **C12Q001-42**

ICS C07D241-36; C09K011-06

AB US 6218137 B UPAB: 20020204

NOVELTY - A reagent composition, which produces **chemiluminescence** in the presence of a phosphatase enzyme, is new.

DETAILED DESCRIPTION - A reagent composition, which produces **chemiluminescence** in the presence of a phosphatase enzyme, is new.
The composition comprises in an aqueous solution:

(1) a heterocyclic phosphonate compound of formula (I), which has a heterocyclic ring system bearing an exocyclic carbon-carbon double bond and reacts with phosphatase; and

(2) a cationic aromatic compound in an amount effective to increase the **chemiluminescence** compared to that generated in the absence of the cationic aromatic compound.

Het = heterocyclic ring system comprising at least one five- or six-membered ring, which contains 2-4 nitrogen atoms as heteroatoms;

Z' = O or S atoms;

R6 = an organic group that allows **chemiluminescence** to be produced;

M = each independently selected from H and a cationic center; and

n = number that satisfies electroneutrality.

INDEPENDENT CLAIMS are also included for the following:

(i) a method for detecting an analyte in a sample by a **chemiluminescent** assay procedure comprises:

(a) reacting a phosphatase enzyme with at least one compound of

formula (I) to produce **chemiluminescence** for detecting the analyte;

(b) detecting the **chemiluminescence**; and

(c) relating the amount of the **chemiluminescence** to the amount of the analyte;

(ii) a method for producing **chemiluminescence**, which comprises reacting a phosphatase me with at least one compound of the formula (I) and a cationic aromatic compound; and

(iii) a process for the preparation of the compound of formula (I).

USE - The composition is useful for generating **chemiluminescence** with phosphatase enzymes. In particular, the composition is useful in methods for producing light and in assays for detecting phosphatase enzymes and enzyme inhibitors, as well as in assays employing phosphatase-labeled specific binding partners.

ADVANTAGE - Prior methods and compositions require multiple reagents or enzymes in order to generate the luminescent signal. This results to added expense or operational complexity, thus hindering commercial acceptance. The use of the present composition provides a highly sensitive assay for detecting and quantifying **hydrolytic** enzymes. Furthermore, the use of the composition in assays does not require additional enzymes or auxiliary reagents in addition to the enzyme **substrate**. The present composition also has superior light-generating ability.

Dwg.0/19

FS CPI

FA AB; GI; DCN

MC CPI: A04-A; A04-C; A10-E08A; A10-E08B; B04-B04C; B04-B04C7; B04-C02A; B04-E01; B04-G01; B04-L05A; B05-B01M; **B11-C07B4**; B12-K04E; D05-A02B; D05-H09; D05-H11; D05-H12

TECH UPTX: 20010822

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Composition: R6 of the compound of formula (I) contains 1-50 atoms selected from C, N, O, S, P and halo. The cationic aromatic compound is selected from cyanine dyes, carbocyanine dyes, azo dyes, acridinium derivatives, methylene blue, Nile blue, IR-1040, lucigenin and paraquat dichloride. The composition further comprises an anionic surfactant in an amount effective to increase the speed with which maximum **chemiluminescence** intensity is reached and a non-ionic surfactant in an amount effective to increase the amount of **chemiluminescence**. The anionic surfactant is selected from alkylsulfates containing at least 10 carbon atoms and alkylsulfonates containing at least 10 carbon atoms. Specifically, the anionic surfactant is sodium dodecyl sulfate. The non-ionic surfactant is selected from polyoxyethylenated alkylphenols, polyoxyethylenated alcohol, polyoxyethylenated ethers and polyoxyethylenated sorbitol esters. The composition also contains a surfactant enhancer in an amount effective to enhance the **chemiluminescence**. In particular, the surfactant enhancer is a copolymer of a vinylbenzyltributylphosphonium salt and a vinylbenzyltrioctylphosphonium salt. Additionally, the composition comprises a sulfite salt, specifically sodium sulfite, in an amount effective to reduce **chemiluminescence** produced by the composition in the absence of a phosphatase enzyme.

Preparation: The compound of the formula (I) is prepared by reacting a heterocyclic ester or thioester compound having the formula (VIII), reacting the formed enolate with a phosphorylating agent to form a protected enol phosphate having the formula (IX), (where the step comprises reacting the enolate of compound (VIII) with a phosphorus oxyhalide compound POW3 to form an enol dihalophosphate having the formula (X), reacting compound (X) with at least two equivalents of a hydroxylic compound Y-OH to form the protected enol phosphate (IX)). The enol phosphate is then deprotected to from the enol phosphate salt compound (I) by reacting (IX) with at least one deprotecting agent in the presence of a cationic species M if the cationic species is not a part of the deprotecting agent. The phosphorylating agent contains the protecting

groups Y and has the formula $W-PO(OY)_2$. The groups Y are connected to form the single group $-CH_2CH_2-$. The deprotecting agent comprises organic or inorganic bases, e.g. sodium hydroxide, potassium hydroxide, potassium carbonate, sodium methoxide, sodium ethoxide, potassium t-butoxide, ammonium hydroxide or nucleophilic agents (e.g. cyanide ion or fluoride ion). Specifically, Y may be a propionyl nitrile group, and the deprotecting agent is sodium hydroxide or sodium carbonate.

Y = protecting group;

W = F, Cl, Br or I; and

M = H, alkali metal ions, alkaline earth ions, quaternary ammonium ions or quaternary phosphonium ions.

Preferred Definitions:

Y = lower alkyl groups, substituted lower alkyl groups, phenyl, substituted phenyl or benzyl groups; and

R₆ = alkyl, substituted alkyl, aryl, situated aryl and alkyl groups.

TECHNOLOGY FOCUS - BIOTECHNOLOGY - Preferred Method: (I) may be reacted with the phosphatase enzyme in the presence of a cationic aromatic compound. The method further comprises reacting the analyte in the sample with an analyte-binding compound, which specifically binds with the analyte and is labeled with alkaline phosphatase. The analyte-binding compound is selected from antibodies, antigens, haptens and nucleic acids. The method further comprises reacting the analyte in the sample with a labeled analyte-binding compound comprising an analyte-binding compound that specifically binds with the analyte and at least one second specific binding substance and a phosphatase-labeled binding partner for the second specific binding substance. Preferably, the detection is performed on a membrane, which comprises a nitrocellulose membrane, a polyvinylidene difluoride membrane or a nylon membrane. The method also includes providing (I) in the reagent composition. Furthermore, the method involves reacting (I) with the phosphatase enzyme in a buffer at a first pH for a first period of time adding a strongly basic trigger solution to the buffer solution to raise the pH of the buffer to a second pH for inducing the **chemiluminescence** and measuring the

chemiluminescence. The first pH is 5.0-9.5. The pH of the trigger solution is greater than or about 11, and the first period of time is about 1 second - 10 minutes. The basic trigger solution contains the surfactant enhancer. The analyte to be detected is the phosphatase enzyme or an inhibitor of the phosphatase enzyme. The phosphatase enzyme is selected from bacterial alkaline phosphatase, mammalian alkaline phosphatase, plant acid phosphatase, mammalian acid phosphatase and alkaline phosphatase conjugates. Specifically, detecting acid phosphatase and alkaline phosphatase in a sample suspected of containing both acid and alkaline phosphatases involves a **chemiluminescence** assay, which comprises reacting the sample with the reagent composition detecting the amount or intensity of **chemiluminescence** during an initial period, waiting a second period of time until the **chemiluminescence** has achieved a constant level, detecting the amount or intensity of **chemiluminescence** during a third period, relating the **chemiluminescence** in the initial time period to the amount of acid phosphatase; and relating the **chemiluminescence** in the third time period to the amount of alkaline phosphatase.

ABEX

EXAMPLE - 4-Fluoroaniline was dissolved in of acetic acid (25 ml) and cooled in an ice bath. Acetic anhydride was added on 5 ml portions to the stirred solution. The resulting solution was poured into cold water and the precipitated product filtered off. The solid was washed with water and vacuum-dried to yield 4-fluoroacetanilide. 4-fluoroacetanilide was condensed with 1-bromo-4-fluorobenzene in the presence of potassium carbonate and copper iodide. After cooling, the mixture was filtered and the solid washed with dichloromethane (DCM). The combined organic solutions were evaporated and dissolved in of ethanol (100 ml). The ethanol was evaporated and the dark residue taken up in ether and washed with water. The ether solution was dried and concentrated and the crude

product purified by column chromatography to produce 4,4-difluorodiihenylamine. 4,4-Difluorodiihenylamine was dissolved in DCM and added to a solution of oxalyl chloride to yield 2,7-difluoroacridine-9-carboxylic acid, which was used to synthesize phenyl 2,7-difluoroacridine-9-thiocarboxylate. Phenyl 2,7-difluoroacridine-9-thiocarboxylate was suspended in 2-propanol along with ammonium chloride. Zinc was added and the reaction mixture was warmed for 2.5 hours. TLC of the reaction mixture showed complete conversion to a new material. The solution was filtered and the precipitate was washed with DCM. The filtrate was concentrated and the light orange residue was redissolved in DCM and washed with water. The organic layer was dried over sodium sulfate and concentrated to yield phenyl 2,7-difluoroacridan-9-thiocarboxylate. Phenyl 2,7-difluoroacridan-9-thiocarboxylate was used to synthesize phenyl 2,7-difluoro-10-methylacridan-9-thiocarboxylate, which was added to a solution of LDA. After stirring for 1 hour, a solution of phosphorus oxychloride and pyridine in tetrahydrofuran (THF) (4 ml) was added and the reaction mixture maintained at -78degreesC for 1 hour. The solution was cooled in an ice bath and treated dropwise with pyridine and 3-hydroxypropionitrile in of THF (4 ml). Then the precipitated pyridine-hydrochloride was filtered away and the reaction solvent evaporated in vacuo. The residue was taken up in ethyl acetate and washed with water. After drying and evaporating the ethyl acetate, the residue was separated chromatographically to yield 9-(phenylthiophosphoryloxymethylidene)-2,7-difluoro-10-methylacridan, bis(cyanoethyl) ester. A solution of the bis(cyanoethyl) phosphate compound in of acetone (17 ml) was cooled in an ice bath and purged with argon. A solution of 1N sodium hydroxide in water was also added dropwise and the solution stirred under argon for 16 hours. The precipitate that formed was suction filtered, washed with acetone and vacuum-dried. The final product was 9-phenylthiophosphoryloxymethylidene)-2,7-difluoro-10-methylacridan, disodium salt (I).

L74 ANSWER 2 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 2001-182973 [18] WPIX

DNC C2001-054654

TI New **chemiluminescent substrates of hydrolytic**

enzymes comprising e.g. acridinium compounds, useful in qualitative and quantitative detection of hydrolases in diagnostic assays e.g. immunoassays, nucleic acid assays or receptor assays.

DC B04 D16 E11 E13

IN JIANG, Q; LAW, S; NATRAJAN, A; SHARPE, D J; WONG, W

PA (FARB) BAYER CORP

CYC 95

PI WO 2001009372 A1 20010208 (200118)* EN 119p C12Q001-42 <--

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU 2000063819 A 20010219 (200129) C12Q001-42 <--

EP 1203091 A1 20020508 (200238) EN C12Q001-42 <--

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
RO SE SI

ADT WO 2001009372 A1 WO 2000-US20429 20000727; AU 2000063819 A AU 2000-63819
20000727; EP 1203091 A1 EP 2000-950764 20000727, WO 2000-US20429 20000727

FDT AU 2000063819 A Based on WO 200109372; EP 1203091 A1 Based on WO 200109372

PRAI **US 1999-146648P 19990730**

IC ICM C12Q001-42

ICS C07D219-06

AB WO 200109372 A UPAB: 20010402

NOVELTY - **Chemiluminescent substrate (I)** of a
hydrolytic enzyme is new.

DETAILED DESCRIPTION - **Chemiluminescent substrate**

of a **hydrolytic** enzyme of formula (I) is new.

Lumi = **chemiluminescent** moiety;

M = multivalent heteroatom having at least one lone pair electrons, directly attached to the Lumi and to P;

P = a group that can be removed by **hydrolytic** enzymes.

USE - (I) are **chemiluminescent** compounds that are **substrates** of **hydrolytic** enzymes (e.g. phosphatases, glycosidases, peptidases, proteases and esterases). (I) are useful in assays for detecting, quantitatively or qualitatively, a **hydrolytic** enzyme of interest that is present either as a label or as a marker of a biological sample. Detection of **hydrolytic** enzymes is used in diagnostic assays e.g. immunoassays, nucleic acid assays or receptor assays, e.g. alkaline phosphatase used as a label in ELISAs. (I) may also be employed in assays which do not use enzymes as labels, e.g. clinical diagnostics for which enzymes may be freely substituted for non-enzyme labels, e.g. radioisotopes, chromophores or fluores. (I) may be used in heterogeneous or homogeneous **chemiluminescent** assay.

ADVANTAGE - The **chemiluminescent** products generated by the action of **hydrolytic** enzymes on (I) have physical and chemical properties (e.g. fundamental net charge distribution, dipole moment, free energy, bond orders, apparent hydrophobicity/hydrophilicity, solubility, or affinity) which are different from those of their corresponding (I). The **chemiluminescent** products therefore have light emission characteristics (i.e. emission maxima, light-emitting kinetics and quantum yields) that are distinctly different from those of their corresponding (I). This allows separation or distinction of the signal of the **substrate** from the signal of the product or vice versa when both **substrate** and product are present in the same test vessel. The **chemiluminescent** products do not undergo substantial decomposition during the enzymatic reaction and thus can be accumulated until triggered by a light-releasing reagent (I) are thermally and **hydrolytically** stable in an aqueous environment and are readily hydrolyzed by **hydrolytic** enzymes.

Dwg.0/32

FS CPI

FA AB; GI; DCN

MC CPI: B05-B01E; B05-B01M; B06-D11; B06-H; B12-K04; D05-A01A4; D05-A01B3; D05-H09; D05-H12; E05-G01; E05-G07; E06-D11; E06-H

TECH UPTX: 20010402

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preparation: No general preparation of (I) is given. In a specific preparation, (Ia) is obtained by reacting an acid of formula (II) with p-TsCl in pyridine followed by reaction with benzoate ester of formula (III) to give a compound of formula (IV) which is treated with F3CSO3Me to give (Ia).

A' = CF3CO2- after the compound has been recovered from HPLC mobile phase containing CF3COOH;

OMEM = methoxyethoxymethoxy.

Preferred Compounds: (I) is a compound of formula (I1) or (I2) where Lumi is an acridinium compound; a compound of formula (I3) where Lumi is an acridan compound; or of formula (I4) where Lumi is a(n) spiroacridan compound. (I) is especially of formula (I2a).

R1 = alkyl, alkenyl, alkynyl or aralkyl containing 0-20 heteroatoms, preferably Me, sulfoalkyl or alkyl containing one or more hydrophilic groups selected from sulfonate, sulfate, COOH, phosphonate, ethylene glycol, polyethylene glycol, quaternary ammonium (N+(R)3), or any groups containing one or more of the hydrophilic groups;

C1, C3-C8 peri-positions of the acridinium nucleus are optionally substituted by R2a-R2c, R3a-R3d;

R2a-R2c, R3a-R3d = R, optionally substituted aryl, halo, nitro, sulfonate, sulfate, phosphonate, COOH, COOR, CN, SCN, OR, SR, SSR, COR, CONHR, ethylene glycol or polyethylene glycol;

R = alkyl, alkenyl, alkynyl, aryl or aralkyl having 0-20 heteroatoms;

A- = counter ion for the electroneutrality of the quaternary nitrogen of the acridinium compounds, the A- not being present if R1 contains a strongly ionizable group that can form an anion and pair with the quaternary ammonium cationic moiety;

X = N, O or S;

provided that:

(i) when X = O, Z = absent and Y = optionally substituted aryl or N=CR9R10;

(ii) when X = S, Z = absent and Y = optionally substituted aryl;

(iii) when X = N, Z = SO2Y', Y' = as for Y, 0-20C optionally halogenated alkyl, substituted aryl or heterocyclic ring system;

R9, R10 = H, optionally substituted aryl, alkyl, alkenyl, alkynyl, halo, alkoxy or aryloxy.

B = divalent cation or 2 monovalent cations;

X1, X2 = O, S or N;

provided that:

(1) when either one or both of X1 and X2 are O or S, the corresponding Z1 or Z2 or both Z1 and Z2 are absent; and

(2) when one or both X1 or X2 = N, the corresponding Z1 or Z2 or both Z1 and Z2 are H, alkyl, aryl or SO2Y';

G = a group connecting X1 and X2 to form a ring having 5-10 members.

Preferably:

R2c, R3a or R3c is M-P, and the C2 peri-position is optionally substituted;

any 2 adjacent substituents at the acridinium nucleus peri-positions can be linked to form additional carbocyclic and heterocyclic rings fused to the attached acridinium nucleus, the rings being selected from e.g.

=CH-CH=, =CH-N=, S-CH= or O-CH=N;

A = MeSO4-, FSO3-, CF3SO3-, C4F9SO3-, MeC6H4SO3-, halo, CF3COO-, MeCOO- or NO3-.

ABEX

WIDER DISCLOSURE - Disclosed as new are light-releasing reagent compositions and reagent addition protocols for triggering light emission from (I) and products that result in better distinction between the signals of (I) and products, where the light-releasing compositions (i) can be single and/or multiple reagent for synchronous or sequential addition to the reaction vessel; (ii) comprise one or more peroxides or peroxide equivalents e.g. H2O2; (iii) interact with (I) and product differentially that the differentiation between the 2 signals is optimized; (iv) contain one or more enhancers selected from organic, inorganic or polymeric compounds having a broad range of molecular weights, which differentially enhance the light output from either the **substrate** or the product; (v) also contain one or more quenchers, blockers or inhibitors selected from organic, inorganic or polymeric compounds having a broad range of molecular weights such that they differentially quench, block or reduce the light output from either (I) or the product.

EXAMPLE - A suspension of 2-methoxyethoxymethoxy-acridine-9-carboxylic acid (II) (3.6 g) in pyridine (150 ml) was treated with p-toluenesulfonyl chloride (4.183 g) at 0 degreesC for 5 minutes to give a homogeneous brown solution. Then, benzyl 3,5-dimethyl-4-hydroxy-benzoate (III) (2.818 g) was added. The solution was stirred at room temperature under nitrogen for 20 hours. The solvent was removed under reduced pressure. The residue was separated on a silica flash chromatography column packed in hexane and eluted with 50% ether/hexane (1 l) followed by 70% ether/hexane (3 l). The product fraction was obtained from the 70% ether/hexane eluent.

Evaporation of the solvents under reduced pressure gave

(2',6'-dimethyl-4'-benzyloxycarbonyl)phenyl 2-methoxy-ethoxy-methoxy-acridine-9-carboxylate (IV) (3.74 g). A light-yellow solution of (IV) (400 mg) in CH2Cl2 (20 ml) was treated with methyl trifluoromethane sulfonate (0.4 ml) at room temperature under N2 with stirring for 14 hours. The resulting mixture was treated with ether. The precipitate was collected and washed with ether (4 x 20 ml) to give crude (2',6'-dimethyl-4'-

benzyloxycarbonyl)phenyl 2-hydroxy-10-methyl-acridinium-9-carboxylate trifluoroacetate (Ia) (325 mg). This compound (25 mg) was further purified on a preparative HPLC column, eluted in gradient by mixing 0.05%TFA/water (solvent A) and 0.05% TFA/acetonitrile (solvent B) in the following manner: 40-60 % B in 40 minutes, flow rate 20 ml/minute, monitored at 260 nm. The product was collected crystallized from CH₂Cl₂/ether to give 17 mg of pure (Ia).

DEFINITIONS - Preferred Definitions:

M = O, N or S;

P = a group that is thermally and hydrolytically stable in aqueous medium and is removable by a hydrolytic enzyme;

Lumi = acridinium compounds, benzacridinium compounds, quinolinium compounds, isoquinolinium compounds, phenanthridium compounds, lucigenin compounds, acridans or other reduced forms of the above, acridines or other non-N-alkylated forms of the above, spiroacridan compounds, luminol compounds or isoluminol compounds.

L74 ANSWER 3 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 1999-370498 [31] WPIX

DNC C1999-109293

TI Microcolonyimager instrument for screening cells expressing mutagenized enzymes.

DC B04 D16

IN BYLINA, E J; COLEMAN, W J; DILWORTH, M R; SILVA, C M; YANG, M M; YOUVAN, D C; YANG, M

PA (KAIR-N) KAIROS SCI INC

CYC 86

PI US 5914245 A 19990622 (199931)* 25p C12Q001-44 <--

WO 2000078997 A1 20001228 (200103)# EN C12Q001-44 <--

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL

OA PT SD SE SL SZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB

GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU

LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR

TT UA UG UZ VN YU ZA ZW

AU 9948258 A 20010109 (200122)# C12Q001-44 <--

ADT US 5914245 A Provisional US 1998-82440P 19980420, US 1998-98202 19980616;

WO 2000078997 A1 WO 1999-US13824 19990617; AU 9948258 A AU 1999-48258

19990617, WO 1999-US13824 19990617

FDT AU 9948258 A Based on WO 200078997

PRAI US 1998-82440P 19980420; US 1998-98202 19980616; WO 1999-US13824

19990617; AU 1999-48258 19990617

IC ICM C12Q001-44

ICS C12Q001-00; C12Q001-37; C12Q001-54

AB US 5914245 A UPAB: 19990806

NOVELTY - A Microcolonyimager (MCI) instrument for imaging and analyzing microcolonies of cells on a target comprising a processor coupled to a light source, camera and a sampling mechanism is new.

DETAILED DESCRIPTION - The instrument includes a processor coupled to a light source for controllably emitting light with a selected set of wavelengths, a camera for imaging light received from the target within a selected set of wavelengths and a sampling mechanism for selecting samples from the target. The instrument automatically images regions of the target over time and indicates which of the portions have a desired change in any optical signal.

INDEPENDENT CLAIMS are also included for:

(1) a method for imaging and analyzing microcolonies of cells which includes forming over 100 regions containing at least one cell on a substantially continuous base at a density of 10 regions/cm², initiating a chemical reaction in each region that results in an optically detectable signal that changes over time, automatically monitoring for changes in the optical signal and indicating which portions show a desired change;

(2) a method of performing solid-phase directed evolution enzyme screening which includes generating an average density of at least 10 microcolonies of cells/cm² on a solid phase expressing variants of at least one enzyme, contacting the expressed variants with at least one optical signal **substrate** (each one indicative of a desired enzyme activity) and automatically detecting changes over time in the optical signals generated by the optical signal **substrates** in the microcolonies which indicate the desired enzymatic activity of the variants of the enzyme; and

(3) a method of performing solid phase enzyme discovery screening including generating a density of at least 10 microcolonies of cells/cm² on a solid phase, contacting the microcolonies which are members of a recombinant DNA library with at least one optical signal **substrate** indicative of a desired enzymatic activity and automatically detecting changes over time in the signals generated by the optical signal **substrates** in the microcolonies where the changes indicate desired enzymatic activity.

USE - For screening cells that express mutagenized enzymes for enhanced activity for example **hydrolytic**, protease, esterase, glycosidase, isomerase, lyase, polymerase, synthase, synthetase, monooxygenase, dioxygenase, transferase or an oxido-reductase or a green fluorescent protein (GFP)-enzyme fusion protein. The MCI can be used in concert with directed evolution to provide customized evolution of enzymes for use in chiral chemistry. It can be used to isolate new enzyme activities that are used in the synthesis, modification or degradation of different substances for example a change in enantiomeric excess, **substrate** specificity, stereospecificity, or rate regiospecificity of a reaction or thermostability or stability of an enzyme in the presence of specified chemicals and enzymatic parameters for the variants of the enzyme. High throughput screening of enzyme libraries by timecourse analyses of single pixels using absorption, fluorescence or fluorescence resonance energy transfer (FRET) can be carried out.

ADVANTAGE - Using microcolonies gives more accurate kinetic and spectral data than from screening colonies and only 100-200 nl **substrate**/reaction are needed whereas liquid samples require 50 micro l/reaction well. The MCI allows fluorogenic **substrates** and new types of membranes to be used which decreases reaction volumes further so this method is particularly suitable for assays that use **substrates** which are expensive or difficult to synthesize.

Dwg.0/7

FS CPI

FA AB; DCN

MC CPI: B04-F01; B04-F10; B04-L01; B06-D01; B07-A02B; B11-C07B2; B11-C08C; B11-C08E3; B12-K04A; B12-K04E; D05-H02; D05-H09

TECH UPTX: 19990806

TECHNOLOGY FOCUS - INSTRUMENTATION AND TESTING - Preferred Imaging: Automatic optical monitoring is carried out by imaging the regions of microcolonies with a camera which forms a pixel image with each region spanning at least one pixel. The image produced is color coded to indicate which portions have a desired change in optical signal and samples are then isolated from these portions either manually or automatically. The instrument automatically selects a sample from at least one indicated portion using the sampling mechanism.

Preferred Light Source: The MCI can use a monochromatic light source or provide a spectrum or white light and has a variable filter for controlling the wavelengths of the light it emits. The instrument also has a fiber optic illuminator and an integrating chamber between the light source and the target to disperse the emitted light and uniformly illuminate the target.

Preferred Camera: Any electronic camera which can be adapted to interact with the computer, preferably a charge-coupled device camera.

Preferred Optical Signal **Substrate**: Either the product or reactant is colored and is a chromogenic, fluorogenic, fluorescence

resonance energy transfer (FRET) or **chemiluminescent substrate**.

Preferred Base: A petri dish, assay disk for growing bacteria or an array of glass or plastic beads can be used as the substantially continuous base allowing free diffusion of liquid throughout its surface.

The average density of regions on the base is preferably at least 200 regions/cm².

TECHNOLOGY FOCUS - BIOLOGY - Preferred Cells: The microcolony is clonally derived from a single parent cell and can be composed of any bacterial, plant, fungal or animal cell.

Cells for the solid-phase directed evolution enzyme screening are produced by generating a library of mutant cells (through inducing mutagenesis of DNA encoding an enzyme and transforming the DNA into cells) on a solid phase with many of the cells expressing variants of at least one enzyme. Gene expression of the variants is induced through induction of a virus-encoded gene using a lytic or temperate virus.

Preferred Method: To contact the expressed variants and expose the enzymes to be contacted with the optical signal **substrate** the cells of the microcolonies are lysed or permeabilized.

A sample is isolated from the indicated microcolonies either manually or automatically and then DNA is obtained from these samples and transformed into biological cells.

ABEX

EXAMPLE - A directed evolution experiment was carried out using the model enzyme system *Agrobacterium* beta-glucosidase (abg) to differentiate between abg mutants 10% Y380F and 90% R377T in a randomly distributed mixture of *Escherichia coli* microcolonies. The mutant enzymes were known to differ 3-fold in kcat for the chromogenic **substrate**, 5-bromo-4-chloro-3-indolyl-beta-galactoside (X-gal). Activity of abg was screened using p-nitrophenyl-glucoside as the **substrate** in a colorimetric assay using a Beckman DU 7400 diode array spectrophotometer equipped with a Peltier temperature-controlled/motor driven 6-cell holder. The prototype Microcolonyimager was used to collect enzyme kinetics information and automatically selected data from 15 pixels that had the highest rate of increase in absorbance and 15 'slow' colonies were manually selected. Two discrete groups formed that differed by 3-fold in velocity. The Y380F variant was about 3 times more active than the R377T enzyme which reflected the known kinetic difference and the measured distribution of velocities matched the 10:90 mix set up in the experiment.

L74 ANSWER 4 OF 4 WPIX (C) 2003 THOMSON DERWENT

AN 1998-322337 [28] WPIX

CR 1994-359708 [45]; 1995-320657 [41]; 1995-373809 [48]; 1996-171724 [17]; 1996-171725 [17]; 1997-488430 [45]; 1998-205997 [18]

DNN N1998-252081 DNC C1998-099110

TI **Chemiluminescent** detection method, e.g. for detection of DNA mutations - using two enzyme-labelled specific binding partners, where the two enzymes together produce a detectable **chemiluminescent** signal.

DC A96 B04 D16 S03

IN AKHAVAN-TAFTI, H; REDDY, L V; SUGIOKA, K; SUGIOKA, Y

PA (LUMI-N) LUMIGEN INC

CYC 24

PI WO 9821586 A1 19980522 (199828)* EN 65p G01N033-535

RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

W: AU CA CN JP KR

AU 9850940 A 19980603 (199842) G01N033-535

US 5843666 A 19981201 (199904) G01N033-535

EP 938677 A1 19990901 (199940) EN G01N033-535

R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

AU 726512 B 20001109 (200063) G01N033-535

JP 2001504226 W 20010327 (200122) 54p G01N033-535

ADT WO 9821586 A1 WO 1997-US19612 19971107; AU 9850940 A AU 1998-50940 19971107; US 5843666 A CIP of US 1994-300367 19940902, US 1996-749595 19961115; EP 938677 A1 EP 1997-913856 19971107, WO 1997-US19612 19971107; AU 726512 B AU 1998-50940 19971107; JP 2001504226 W WO 1997-US19612 19971107, JP 1998-522595 19971107

FDT AU 9850940 A Based on WO 9821586; EP 938677 A1 Based on WO 9821586; AU 726512 B Previous Publ. AU 9850940, Based on WO 9821586; JP 2001504226 W Based on WO 9821586

PRAI US 1996-749595 19961115; US 1994-300367 19940902

IC ICM G01N033-535
ICS **C12Q001-68**; G01N033-543

ICA G01N033-53

AB WO 9821586 A UPAB: 20010421

A method for simultaneously detecting a first and second target species (S1 and S2), by a single **chemiluminescent** reaction, comprises: (a) contacting a sample (which is suspected of containing S1 and S2) with: (i) a first specific binding partner (SBP1) which binds to S1, to form a first binding pair (BP1); and (ii) a second specific partner (SBP2) which binds to S2, to form a second binding pair (BP2); (b) providing a **hydrolytic** enzyme as a label for SBP1, and providing a peroxidase enzyme as a label for SBP2; (c) providing, for reaction with BP1 and BP2, a **chemiluminescent** peroxidase **substrate** (PS), a peroxide compound and a protected enhancer compound of formula ArOX (where X is a group which is removable by the **hydrolytic** enzyme to produce a phenolic enhancer compound ArOH which enhances the activity of the peroxidase enzyme); (d) allowing the **hydrolytic** enzyme to react with the ArOX compound to give the ArOH compound, which enhances the activity of the reaction of the peroxidase with the peroxide and the PS, thus producing **chemiluminescence**; and (e) measuring the **chemiluminescence** produced, where the presence of **chemiluminescence** indicates the presence of both target species in the sample.

USE - The process may be used to detect and quantitate various biological molecules, e.g., antigens and antibodies by immunoassay, proteins by Western blotting, DNA by Southern blotting or RNA by Northern blotting. The process may be used to detect DNA mutations and chromosomal translocations. The process can be used to differentiate homozygotes from heterozygotes for a genetic condition specifically in cystic fibrosis. (all claimed)

ADVANTAGE - The process uses two enzyme-labelled probes acting in concert to generate **chemiluminescence**. The process allows quantitation with increased specificity.

Dwg.0/8

FS CPI EPI

FA AB; DCN

MC CPI: A12-V03C2; B04-B03C; B04-B04C; B04-E01; B04-E05; B04-G01; B04-L03B; B04-L05A; B04-N04; B05-B01M; B05-B01N; B05-B02C; B05-C08; B06-D06; B06-D11; B06-F01; B07-A02B; B07-D09; B07-F01; B10-A06; B10-A15; B10-C03; B10-D03; B10-G02; **B11-C07B4**; B12-K04; D05-A01A4; D05-A01B1; D05-A01B3; D05-H09; D05-H11; D05-H12D1
EPI: **S03-E04E**; S03-E14H4

=> d all abeq tech abex tot

L84 ANSWER 1 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 2001-502720 [55] WPIX

DNC C2001-151260

TI Assaying for a target nucleic acid comprising employing a quasi-autocatalytic replicase activity and detecting the presence of amplified target to ensure fidelity.

DC B04 D16

IN **JIANG, Q**; **LAW, S**; **MONAHAN, J E**; **MORELLO, A M**

PA (JIAN-I) JIANG Q; (LAWS-I) LAW S; (MONA-I) MONAHAN J E; (MORE-I) MORELLO A
M; (FARB) BAYER CORP

CYC 21

PI WO 2001059162 A2 20010816 (200155)* EN 61p C12Q001-68 <--

RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

W: JP

US 2002098485 A1 20020725 (200254) C12Q001-68 <--

ADT WO 2001059162 A2 WO 2001-US4244 20010208; US 2002098485 A1 Provisional US
2000-180918P 20000208, US 2001-781106 20010208

PRAI US 2000-180918P 20000208; US 2001-781106 20010208

IC ICM **C12Q001-68**

ICS C12P019-34

AB WO 200159162 A UPAB: 20010927

NOVELTY - Assaying for a target nucleic acid comprising:

(a) combining probes with a nucleic acid sample;

(b) causing autocatalytic replication of replicable sequences and
antitarget sequence segments in the probes; and

(c) detecting the replicated ATS, is new.

DETAILED DESCRIPTION - Assaying (M1) for a target nucleic acid
comprises:

(a) combining a set of one or more amplification probes (I) with a
nucleic acid sample (NS) under conditions suitable for hybridization to
form a hybridized complex comprising a quasi-autocatalytically replicable
sequence;

(b) subjecting the hybridized complex to conditions suitable for the
replicase to cause quasi autocatalytic replication of both first and
second partial replicable sequences and the first and second antitarget
sequence segments; and

(c) detecting amplified levels of the replicated ATS.

The NS comprises a target sequence (TS) with a complementary
antitarget sequence (ATS). Each (I) of the set of (I) comprises an ATS
segment capable of hybridizing to the TS and a replication segment
comprising partial replicable sequence.

INDEPENDENT CLAIMS are also included for the following:

(1) Assaying (M2) a target nucleic acid comprising:

(a) combining a first and second amplification probe, each with an
ATS capable of hybridizing with a replicable sequence with a nucleic acid
sample comprising a TS, to form a hybridized complex such that the
replicable sequences have a quasi-autocatalytically replicable sequence;

(b) subjecting the hybridized complex to conditions suitable for the
replicase to cause quasi autocatalytic replication of both first and
second partial replicable sequences and the first and second antitarget
sequence segments; and

(c) detecting amplified levels of the replicated ATS;

(2) Assaying (M3) a target nucleic acid comprising:

(a) combining a first and second amplification probe, each with an
ATS capable of hybridizing with a replicable sequence with a nucleic acid
sample comprising a TS, to form a hybridized complex such that the
replicable sequences have a quasi-autocatalytically replicable sequence;

(b) Subjecting the amplifiable segments to conditions effective for
catalysis resulting in replication of both the amplifiable sequence and
the ATS; and

(c) detecting the presence of the ATS;

(3) A kit for nucleic acid amplification or for performing the
methods comprising:

(a) a set of containers containing target specific amplification
probes comprising an ATS and a replicase replicable sequence segment;

(b) a replicase enzyme container; and

(c) a detection probe comprising a reporter molecule and a TS
detection segment;

(4) Increasing (M4) the signal to noise ratio for detecting a TS
obtainable from detection probes that hybridize to TS segments where the
TS segments do not overlap and the TS segments reside in a region

comprising the TS and the signal to noise ratio for detection of the target by the first probe is enhanced by the presence of the second probe.

USE - M1, M2 and M3 are useful for assaying a target nucleic acid. M4 is useful for increasing the signal to noise ratio for detecting a target sequence (all claimed).

ADVANTAGE - Increases the fidelity of amplification by improving the signal to noise ratio making it easier to discern whether a target sequence is present in the analyte when using Q beta replicase amplification. This is performed by utilizing additional detection probes for determining the amount of unhybridized replicase replicable sequence to determine fidelity.

It had been observed a number of times that the signal to noise ratio (S/N) of one detection probe was enhanced as a result of the presence of a second probe. Using Q beta amplification products as analyte sample, detection analyses were conducted with either one or two detection probes. Enhancement in S/N for one detection probe was demonstrated in those tests where two detection probes were used. The slope of S/N versus amount of amplification product was 3.78 with one detection probe and was 5.63 with two detection probes representing an enhancement of 49%.

Dwg.0/6

FS CPI

FA AB; DCN

MC CPI: B04-E03; B04-E05; B04-L04A; **B11-C07B4**; B11-C08E3;

B11-C08E5; B12-K04A; B12-K04F; D05-H09; D05-H12; D05-H12D1; D05-H18B

TECH UPTX: 20010927

TECHNOLOGY FOCUS - BIOTECHNOLOGY - Preferred Method: The probes comprise DNA sequences. The replicase has DNA-dependent RNA polymerase activity and is preferably a Qbeta replicase. The detecting is by a set of target sequence probes comprising a reporter molecule and a detection sequence complementary to the TS or ATS, preferably the detection sequence comprises a portion of the ATS. Step (a) further comprises removing all unhybridized probe molecules from the hybridized complex. The method further comprises detecting amplified replicase replicable sequence by a probe comprising a second reporter molecule and a second detection sequence which is complementary to the replicable sequence. The detecting of step (d) is by a replicable sequence detection probe comprising a nucleic acid sequence coupled to a paramagnetic particle and complementary to the replicable sequence.

In M4, the TS is a double stranded sequence, and the method further comprises employing a third detection probe that hybridizes to a third detection sequence segment and also enhances signal to noise ratio. Preferred Reporter Molecule: The reporter molecule comprises a luminescent molecule preferably a **chemiluminescent** molecule preferably an **acridinium**, **benzacridinium**, **quinolinium**, **isoquinilium**, **phenanthridinium**, **luminol**, **isoluminol** or **lucigenin** most preferably a **dimethyl acridinium** ester or long emission **acridinium** ester.

ABEX

EXAMPLE - No suitable example is given.

L84 ANSWER 2 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 2000-400192 [34] WPIX

DNN N2000-299758 DNC C2000-120935

TI Measurement of hydride generated in a chemical, biochemical or enzyme-catalysed reaction using **chemiluminescence** generated when an **acridinium** compound reacts with hydride.

DC B02 B04 D16 S03

IN **JIANG, Q; LAW, S; NATRAJAN, A; PARSONS, G; SHARPE, D**

PA (FARB) BAYER CORP

CYC 88

PI WO 2000031543 A1 20000602 (200034)* EN 64p G01N033-58

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL

OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB
GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU
LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR
TT UA UG US UZ VN YU ZA ZW

AU 2000011734 A 20000613 (200043) C07D221-12
BR 9907248 A 20001017 (200056) G01N033-58
EP 1049933 A1 20001108 (200062) EN G01N033-58

R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
JP 2002530678 W 20020917 (200276) 54p G01N031-00

ADT WO 2000031543 A1 WO 1999-IB1894 19991124; AU 2000011734 A AU 2000-11734
19991125; BR 9907248 A BR 1999-7248 19991124, WO 1999-IB1894 19991124; EP
1049933 A1 EP 1999-972738 19991124, WO 1999-IB1894 19991124; JP 2002530678
W WO 1999-IB1894 19991124, JP 2000-584306 19991124

FDT AU 2000011734 A Based on WO 200031543; BR 9907248 A Based on WO 200031543;
EP 1049933 A1 Based on WO 200031543; JP 2002530678 W Based on WO 200031543

PRAI US 1998-109823P 19981125

IC ICM C07D221-12; G01N031-00
ICS C07D215-50; C07D219-04; C12Q001-00; C12Q001-32;
G01N021-78

ICA G01N033-58

AB WO 200031543 A UPAB: 20000718

NOVELTY - A **chemiluminescent** assay for detecting or quantitating
hydride comprises measuring the **chemiluminescence** generated when
a **chemiluminescent** compound reacts with hydride generated in a
chemical, biochemical or enzyme-catalysed reaction.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(i) a method for determining the amount of hydride produced in a
reaction;

(ii) a method for determining the amount of an analyte in a sample by
determining the amount of hydride produced in a reaction;

(iii) a kit comprising reagents for a colorimetric assay for hydride
and a **chemiluminescent** indicator of hydride;

(iv) a **chemiluminescent** hydride indicator of formula (I),
(II) or (III);

(v) a method for eliminating interference resulting from the presence
of whole blood comprising:

(a) adding a solid phase coated with an antibody specific for an
acridinium compound;

(b) incubating to allow capture of the **acridinium** compound;

and

(c) separating the solid phase and washing to remove the interfering
substance.

R1 = alkyl, alkenyl, alkynyl or aralkyl containing up to 20
heteroatoms;

R2, R2', R3 = H, R, Ar-R, Ar, halogen, NH2, OH, NO2, sulfonate, CN,
COOH, SCN, OR, SR, SSR, C(O)R, C(O)OR, C(O)NHR or NHC(O)R; or

R2 + R3 = additional ring fused to the **acridinium** nucleus;

Ar = aryl;

R = alkyl, alkenyl, alkynyl, aryl or aralkyl optionally containing
up to 20 heteroatoms;

A- = counter ion;

X = N, O or S;

Y' = polysubstituted aryl;

R5, R6, R7 = R2;

Z' = absent when X is O or S, or is SO2-Y' when X is N; and

R4, R8 = H, alkyl, alkenyl, alkynyl, OR, SR or substituted amino.

NB: R5, R6 and R7 are defined but not used.

USE - The assay is useful for determining the amount of hydride
produced in a reaction (e.g. biochemical redox reaction of an enzyme
cofactor, especially NAD+, NADP+, FMN or FAD) or the amount of an analyte
(especially theophylline, valproate, quinidine or ethanol in serum) in a
sample.

Assays were conducted as follows. Samples were treated with a solution containing glucose-6-phosphate (G6P), NAD and anti-theophylline antibody (300 micro l) and incubated at 37 deg. C for 2 minutes 40 seconds. A buffered solution of theophylline-G6PDH (glucose-9-phosphate dehydrogenase) conjugate (150 micro l) was added and the mixture was incubated at 37 deg. C for 2 minutes and 40 seconds. The **chemiluminescent** indicator (20 micro l) was added and the mixture was incubated at 37 deg. C for 5 minutes. The mixture was treated with 0.1M HNO₃/0.5 % H₂O₂ and 0.25M NaOH/0.5 % N,N,N,N-hexadecyltrimethylammonium chloride to initiate the **chemiluminescent** reaction.

ADVANTAGE - The method eliminates interference resulting from the presence of whole blood.

Dwg.0/22

FS CPI EPI

FA AB; GI; DCN

MC CPI: B06-D02; B06-D11; **B11-C07B4**; B11-C09; B12-K04E; D05-H09

EPI: S03-E14H

TECH UPTX: 20000718

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Method: The **chemiluminescent** compound is preferably an **acridinium**, **benzacridinium**, phenanthridinium, quinolinium or lucigenin or a conjugate, ester or sulfonylamide.

The hydride preferably reacts with a **chemiluminescent** compound containing:

- (a) an extended electronic conjugation system;
- (b) a hydride reducible quencher;
- (c) electron donating groups; or
- (d) a fluorescent resonance energy acceptor.

ABEX

EXAMPLE - **Acridine**-9-carboxylic acid (5 g) was heated under reflux with SOCl₂ (25 ml) to give a solution which was cooled and poured into benzene (200 ml). The suspension was chilled in a refrigerator overnight and filtered to give 5.3 g of the acid chloride. The above compound (5.3 g) was mixed with 2,6-dimethylphenol and dimethylaminopyridine (0.5 g) in pyridine (40 ml) and heated to 100 degreesC for 3 hours. The mixture was cooled and purified by chromatography to give 2',6'-dimethylphenyl **acridine**-9-carboxylate.

A solution of the above compound (20 mg) in anhydrous CH₂Cl₂ (2 ml) was treated with methyl trifluoromethanesulfonate (0.175 ml) for 16 hours. Anhydrous ether (50 ml) was added and the precipitate was collected and washed to give 29 mg of 2',6'-dimethylphenyl 10-**methylacridinium**-9-carboxylate trifluoromethanesulfonate.

The above compound (50 mg) in MeOH (20 ml) was cooled in an ice bath and treated with NaBH₄ (20 mg). After 1 hour, additional NaBH₄ (20 mg) was added and the mixture was stirred at room temperature for 16 hours. Acetic acid (1 ml) was added and the mixture was concentrated. The residue was purified by chromatography to give 30 mg of 2',6'-dimethylphenyl 10-**methylacridinium**-9-carboxylate (DMAE-phi).

A 0.10 M N(10)-**methylacridinium** tetrafluoroborate (300 microl) was mixed with 0.50 microM DMAE-phi (750 microl) into water (1.95 ml) to give the **chemiluminescent** hydride indicator.

DEFINITIONS - Preferred Definitions:

R1 = Me or sulfoalkyl;

A- = CH₃SO₄-, FSO₃-, CF₃SO₃-, C₄F₉SO₃-, CH₃C₆H₄SO₃-, halide, CF₃COO-, CH₂COO- or NO₃-

Y' = phenyl substituted by R₄, R₅, R₆, R₇ and R₈ in positions 1, 2, 3, 4 and 5 respectively;

R₄, R₈ = H, alkyl, alkenyl, alkynyl, alkoxy, alkylthio or substituted amine, preferably lower alkyl, especially methyl;

R₆ = R₂ or R₉-R₁₀;

R9 = absent, alkyl or aryl or aralkyl (containing up to 20 heteroatoms);
 R10 = leaving group or electrophilic functional group selected from
 N=C=S, -N=C=O, SO₂Cl, -N₃, -N₂+Cl-, halide, C(O)-halide, C(O)OH, C(O)OR,
 QRNu, -Q-R-(I)nNu, -Q-Nu, -R-Nu, -Nu or a group of formula (i) - (vii);
 n = at least 1;
 Nu = nucleophilic group;
 Q = functional linkage; and
 I = ionic or ionizable group.

L84 ANSWER 3 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 2000-224255 [19] WPIX

DNN N2000-168079 DNC C2000-068424

TI New **acridinium** compounds, useful in assays for detection or
 quantitation of analytes.

DC B04 D16 E22 J04 S03

IN **JIANG, Q; LAW, S; NATRAJAN, A; SHARPE, D**

PA (FARB) BAYER CORP

CYC 87

PI WO 2000009487 A1 20000224 (200019)* EN 89p C07D219-04

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SL SZ UG ZW

W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI
 GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT
 LU LV MD MG MK MN MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM
 TR TT UA UG US UZ VN YU ZW

AU 9954739 A 20000306 (200030) C07D219-04

EP 1104405 A1 20010606 (200133) EN C07D219-04

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI

US 6355803 B1 20020312 (200221) C07D219-04

US 2002076823 A1 20020620 (200244) G01N021-76

JP 2002522530 W 20020723 (200263) 104p C07D219-04

ADT WO 2000009487 A1 WO 1999-US18076 19990810; AU 9954739 A AU 1999-54739
 19990810; EP 1104405 A1 EP 1999-941005 19990810, WO 1999-US18076 19990810;
 US 6355803 B1 Provisional US 1998-96073P 19980811, US 1999-371489
 19990810; US 2002076823 A1 Provisional US 1998-96073P 19980811, Div ex US
 1999-371489 19990810, US 2001-6421 20011206; JP 2002522530 W WO
 1999-US18076 19990810, JP 2000-564941 19990810

FDT AU 9954739 A Based on WO 200009487; EP 1104405 A1 Based on WO 200009487;
 JP 2002522530 W Based on WO 200009487

PRAI US 1998-96073P 19980811; US 1999-371489 19990810; US 2001-6421
 20011206

IC ICM C07D219-04; G01N021-76

ICS C07D401-12; C07K017-06; C09K003-00; C09K011-07; C12N015-09;

C12Q001-68; G01N033-533; G01N033-58

ICA C07K014-765; C07K016-26; G01N033-532

AB WO 200009487 A UPAB: 20000419

NOVELTY - **Acridinium** compounds emitting light having wavelength
 maxima longer than 590 nm are new.

DETAILED DESCRIPTION - New **acridinium** compound comprises an
 extended, coplanar, conjugated system formed by the attachment of a
 functional group on the **acridinium** nucleus. The system maintains
 coplanarity during light emission and the functional group comprises at
 least one aromatic ring and one electron-donating atom or group or the
 compound comprises one or more electron-donating atoms or groups directly
 attached to the **acridinium** nucleus. The functional group is
 attached to C-3 or C-1 position of the **acridinium** nucleus and
 the electron-donating atoms or groups directly attached to the nucleus are
 attached to one or more of the positions C-2, C-4, C-5 or C-7.

USE - The compound may be used in assays for the detection or
 quantitation of an analyte or for simultaneous detection of multiple
 analytes (claimed). When two or more compounds are used, the compounds

allow the discrimination of their wavelengths or magnitude and the differences in the magnitude can be correlated to the amounts of the various analytes present. When two analytes are to be determined, two compounds are used which luminesce at two different wavelength maxima, which allow discrimination of their signals and magnitude, which in turn can be correlated to the amounts of the two analytes present.

Dwg.0/6

FS CPI EPI

FA AB; DCN

MC CPI: B02-Z; B03-L; B04-B03C; B04-C02; B04-E01; B04-G01; B04-J01; B04-J02; B04-L01; B04-N04; B04-N05; B04-N06; B06-D11; **B11-C07B4**; B12-K04; D05-H09; E06-D11; E25-E01; J04-B01

EPI: S03-E14H; S03-E14H4

TECH UPTX: 20000419

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Compound: The **acridinium** compound is conjugated to a small organic biomolecule, viral particle, sub-cellular component or entire cell. The conjugation is either by direct covalent bonding or by indirect bonding via a spacer. The macromolecule is selected from protein, peptide, inactivated protein, DNA, RNA, oligonucleotide, polysaccharide, oligosaccharide, glycoprotein, glycosamino glycan, lectin, lipoprotein, lipopolysaccharide, hormone, toxin and cytokine. The protein is selected from antibody, antibody fragment, avidin, streptavidin, allergen, receptor protein, DNA binding protein, viral antigen, bacterial antigen, eukaryotic antigen, immunoglobulin binding protein and enzyme. The sub-cellular component is ribosome and the entire cell is selected from bacterial and eucaryotic cells. The small organic biomolecule is a hapten, ligand or biologically active molecule. The hapten is a thyroid hormone, steroid, vitamin, antibiotic, enzyme cofactor, therapeutic drug, metabolite, lipid, neurotransmitter or controlled chemical substance.

TECHNOLOGY FOCUS - INSTRUMENTATION AND TESTING - Preferred Components: Light is emitted on reaction of the **acridinium** compound with hydrogen peroxide, sodium peroxide or bivalent peroxide salts.

ABEX

SPECIFIC COMPOUNDS - 9 Compounds are claimed: e.g. 2',6'-dimethyl-4'-carboxyphenyl 3-(4-hydroxystyrenyl)-10-methyl-**acridinium**-9-carboxylate.

EXAMPLE - N-(3-(1,3-Dioxolyl)phenyl)isatin was prepared then converted in turn to 2-(**acridine**-9-carboxyl)-1,3-dioxolane, **acridine**-9-carboxylic acid-3-carboxaldehyde and 2'6'-dimethyl-4'-benzyloxycarbonylphenyl **acridine**-9-carboxylate-3-carboxaldehyde. 4-Benzyloxybenzyltriphenyl phosphonium chloride was prepared then reacted with 2'6'-dimethyl-4'-benzyloxycarbonylphenyl **acridine**-9-carboxylate-3-carboxaldehyde to give 2'6'-dimethyl-4'-benzyloxycarbonylphenyl 3-(4-benzyloxystyrenyl)-**acridine**-9-carboxylate which was reacted to give 2'6'-dimethyl-4'-benzyloxycarbonylphenyl 3-(4-benzyloxystyrenyl)-10-methyl **acridinium**-9-carboxylate trifluoromethane sulfonate. 2'6'-Dimethyl-4'-benzyloxycarbonylphenyl 3-(4-benzyloxystyrenyl)-10-methyl **acridinium**-9-carboxylate (11 mg.) was stirred in a mixture of dimethyl sulfide (2 ml.) and 30% HBr in acetic acid (1 ml.). After 4 hours at room temperature, ether + hexanes (20 ml.; 1:1) was added and the precipitated solid was collected by filtration and rinsed. The residue was dissolved in methanol and concentrated under reduced pressure. The product was isolated by preparative HPLC and the fraction containing the product was evaporated to dryness to give 2',6'-dimethyl-4'-carboxyphenyl 3-(4-hydroxystyrenyl)-10-methyl-**acridinium**-9-carboxylate (5 mg.; 63%) as a purple solid.

CR 1990-038667 [06]
DNN N1995-275463 DNC C1995-161831
TI New hydrophilic **acridinium** ester(s) - useful as
chemiluminescent labels in binding assays esp. for testosterone or
rubella virus, with good solubility and low signal to noise ratio.
DC A96 B01 B02 B04 S03
IN CONNOLLY, P B; **JIANG, Q**; KILROY, J P; **LAW, S**;
MCCUDDEN, C R; **NATRAJAN, A**; SOTIRIOU-LEVENTIS, C; TIRRELL, S M;
CONNOLLY, P B
PA (CIBA) CIBA CORNING DIAGNOSTICS CORP; (FARB) BAYER CORP; (CHIR) CHIRON
DIAGNOSTICS CORP
CYC 64
PI WO 9527702 A1 19951019 (199548)* EN 71p C07D219-04
RW: AT BE CH DE DK ES FR GB GR IE IT KE LU MC MW NL OA PT SD SE SZ UG
W: AM AT AU BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE
KG KP KR KZ LK LR LT LU LV MD MG MN MW MX NO NZ PL PT RO RU SD SE
SG SI SK TJ TT UA US UZ VN
AU 9520816 A 19951030 (199606) C07D219-04
EP 754178 A1 19970122 (199709) EN C07D219-04
R: AT BE CH DE DK ES FR GB IT LI
US 5656426 A 19970812 (199738) 28p C12Q001-68 <--
BR 9507307 A 19970902 (199741) C07D219-04
KR 97702257 A 19970513 (199821) C07D219-06
JP 10503169 W 19980324 (199822) 66p C07D219-04
AU 703436 B 19990325 (199924) C07D219-04
MX 9604646 A1 19980201 (199954) C07D219-04
EP 982298 A1 20000301 (200016) EN C07D219-04
R: AT BE CH DE DK ES FR GB IT LI
EP 754178 B1 20030115 (200306) EN C07D219-04
R: AT BE CH DE DK ES FR GB IT LI
ADT WO 9527702 A1 WO 1995-IB244 19950406; AU 9520816 A AU 1995-20816 19950406;
EP 754178 A1 EP 1995-913298 19950406, WO 1995-IB244 19950406; US 5656426 A
Cont of US 1988-226639 19880801, Div ex US 1992-826186 19920122, CIP of US
1993-32231 19930317, US 1994-225165 19940408; BR 9507307 A BR 1995-7307
19950406, WO 1995-IB244 19950406; KR 97702257 A WO 1995-IB244 19950406, KR
1996-705658 19961008; JP 10503169 W JP 1995-526216 19950406, WO 1995-IB244
19950406; AU 703436 B AU 1995-20816 19950406; MX 9604646 A1 MX 1996-4646
19961007; EP 982298 A1 Div ex EP 1995-913298 19950406, EP 1999-203889
19950406; EP 754178 B1 EP 1995-913298 19950406, WO 1995-IB244 19950406,
Related to EP 1999-203889 19950406
FDT AU 9520816 A Based on WO 9527702; EP 754178 A1 Based on WO 9527702; US
5656426 A Div ex US 5227489, CIP of US 5449556; BR 9507307 A Based on WO
9527702; KR 97702257 A Based on WO 9527702; JP 10503169 W Based on WO
9527702; AU 703436 B Previous Publ. AU 9520816, Based on WO 9527702; EP
982298 A1 Div ex EP 754178; EP 754178 B1 Related to EP 982298, Based on WO
9527702
PRAI US 1994-225165 19940408; US 1988-226639 19880801; US 1992-826186
19920122; US 1993-32231 19930317
REP EP 263657; EP 273115; EP 353971; EP 361817; EP 82636
IC ICM C07D219-04; C07D219-06; **C12Q001-68**
ICS C07J043-00; G01N033-53; G01N033-532; G01N033-533; G01N033-569;
G01N033-58
AB WO 9527702 A UPAB: 20030124
Acridinium esters of formula (I) are new. R1 = up to 24C alkyl,
alkenyl, alkynyl, aryl or aralkyl, opt. with up to 20 heteroatoms (N, O, P
or S); R2, R3, R5 and R7 = H, NH2, OH, halo, NO2, CN, SO3H, SCN, R, OR,
NHCOR, COR, COOR or CONHR; R = R1; R4, R8 = up to 8C alkyl, alkenyl,
alkynyl, aralkyl or alkoxy with no side chains longer than 2C; R6 =
R9-R10; R9 = absent or alkyl or aralkyl with up to 5 heteroatoms as above;
R10 = electrophile, leaving gp. (or combination of both) or one of -COOQ1,
COY, COORa, C(=NH2+)ORaCl-, -NCS, -NCO, N3, halo, COOH or -NHCO-Ra-Q2; Q1 =
succinimido, phthalimido, imidazol-1-yl, OCO-ORa, Y or ORa; Ra = alkyl,
aryl or aralkyl; Q2 = maleimido or -S-S-(2-pyridyl); Y = halo; the

positions of R5, R6 and R7 on the ring are interchangeable.

Also new are conjugates (C) consisting of (I) coupled (in)directly to another cpd. or macromolecule.

USE - (I) are useful as **chemiluminescent** labels in binding assays (e.g. immunoassays or gene probe assays), most esp. in assays for testosterone or rubella virus, in vivo or in vitro.

ADVANTAGE - (I) are highly soluble in water; have higher quantum yield than known **acridinium** esters; can be encapsulated in liposomes without significant leakage, and provide (C) of good solubility. They provide improved assay sensitivity and speed, and numerous (I) can be attached to a single macromolecule to improve the signal to noise ratio.

Dwg.0/9

FS CPI EPI

FA AB; GI; DCN

MC CPI: A12-V03C2; A12-W11L; B06-D11; B12-K04A

EPI: S03-E14H; S03-E14H4

ABEQ US 5656426 A UPAB: 19970922

An **acridinium** ester of the following formula (I):

wherein

R1 is alkyl, alkenyl, alkynyl, aryl, or aralkyl, having up to 24 carbons and 1 to 20 heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorous and sulfur; and

R2, R3, R5, and R7 are hydrogen, amino, hydroxyl, halide, nitro, -CN, -SO3H, -SCN, -R, -OR, -NHCOR, -COR, -COOR, or -CONHR, wherein

R is alkyl, alkenyl, alkynyl, aryl, or aralkyl, having up to 24 carbons and up to 20 heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorous, and sulfur; and

R4 and R8 are alkyl, alkenyl, alkynyl, aralkyl, or alkoxyl having up to 8 carbons, with no branching wherein the side chain groups have more than 2 carbons; and

R6 represents the following substitutions: R6=R9-R10 wherein

R9 is not required but optionally can be an alkyl, or aralkyl group having up to 5 heteroatoms which can be P, S, N, or O, and

R10 is an electrophile, a leaving group, a group with these two combined natures, or selected from the following structures; -NCO, N3, a halide, -COOH, -COOCOR, -CO1Y, -COOR, Cl, -N=C=S or other groups

where Y is a halide and R is an alkyl, aryl, or aralkyl group; and where R5, R6, and R7 substituent positions on the phenoxy ring are interchangeable.

Dwg.0/9

L84 ANSWER 5 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 1994-295895 [37] WPIX

CR 1994-287315 [36]; 1999-203947 [17]

DNN N1994-232774 DNC C1994-134924

TI Simultaneous assay of analytes using different **chemiluminescent** tracers - partic. for immunoassays and hybridisation assays, also new fused ring **acridinium** cpds. and their intermediates.

DC B04 D16 E24 J04 S03

IN FISCHER, W; JIANG, Q; KRODEL, E K; LAW, S; UNGER, J T

PA (CIBA) CIBA CORNING DIAGNOSTICS CORP; (CIBA) CIBA GEIGY UK LTD; (CIBA) CIBA GEIGY AG; (NOVS) NOVARTIS AG; (FARB) BAYER CORP; (CHIR) CHIRON DIAGNOSTICS CORP

CYC 16

PI EP 617288 A2 19940928 (199437)* EN 81p G01N033-58

R: AT BE CH DE DK ES FR GB IT LI NL

AU 9455018 A 19940922 (199439) C09B015-00

WO 9421823 A1 19940929 (199439) EN 133p C12Q001-68 <--

W: PL

CA 2118891 A 19940920 (199444) C07D221-18

US 5395752 A 19950307 (199515) 50p C12Q001-68 <--

JP 08320319 A 19961203 (199707) 47p G01N033-50
 AU 677259 B 19970417 (199723) C09B015-00
 US 5702887 A 19971230 (199807) 60p C12Q001-68 <--
 EP 617288 B1 20020502 (200230) EN G01N033-58
 R: AT BE CH DE DK ES FR GB IT LI NL
 DE 69430500 E 20020606 (200245) G01N033-58
 ES 2176229 T3 20021201 (200305) G01N033-58
 ADT EP 617288 A2 EP 1994-810170 19940318; AU 9455018 A AU 1994-55018 19940210;
 WO 9421823 A1 WO 1994-US3020 19940318; CA 2118891 A CA 1994-2118891
 19940311; US 5395752 A US 1993-35130 19930319; JP 08320319 A JP 1994-50109
 19940322; AU 677259 B AU 1994-55018 19940210; US 5702887 A Div ex US
 1993-35130 19930319, US 1994-340093 19941114; EP 617288 B1 EP 1994-810170
 19940318; DE 69430500 E DE 1994-630500 19940318, EP 1994-810170 19940318;
 ES 2176229 T3 EP 1994-810170 19940318
 FDT AU 677259 B Previous Publ. AU 9455018; US 5702887 A Div ex US 5395752; DE
 69430500 E Based on EP 617288; ES 2176229 T3 Based on EP 617288
 PRAI US 1993-35341 19930319; US 1993-35130 19930319; US 1994-340093
 19941114
 REP EP 322926; GB 2233450; US 4683202; US 5110932
 IC ICM C07D221-18; C09B015-00; **C12Q001-68**; G01N033-50; G01N033-58
 ICS C07D219-04; C07D471-04; C07D491-052; C07D495-04; C07F009-547;
 C09K011-00; C09K011-06; C12P019-34; G01N021-76; G01N021-78;
 G01N033-48; G01N033-52; G01N033-53; G01N033-532; G01N033-74
 ICA G01N033-76
 AB EP 617288 A UPAB: 20030121
 Detection and/or quantitation of at least 2 substances (I) comprises
 simultaneously detecting the spectral emission signals from at least 2
 different **chemiluminescent** cpds. (II), each associated with a
 (I). Also new are (1) method for amplifying target sequences (TS); (2)
 (II) which upon chemical treatment, emit blue-green, green, yellow, orange
 or red-orange light; (3) test kits for detecting (I) contg. at least 2 (II)
 conjugated to analyte-specific binding partners; (4) **benzoacridine**
 derivs. as luminescent cpds. (5) **benzoacridine** derivs. as
 intermediates of (4); (6) the intermediate 3-methoxyacridine
 -9-carboxylic acid hydrochloride (III).
 USE - The method is useful in industrial and partic. clinical
 diagnostic assays, partic. immunoassays; homogeneous or heterogeneous
 hybridisation assays, or amplification assays, for antigens, antibodies or
 nucleic acid (e.g. oncogenes).
 ADVANTAGE - The good sepn. between emissions from different (II)
 allows a single sample to be used for several tests and emission from all
 (II) is induced under identical conditions. (II) are stable enough for
 transport in kit form in aq. soln. Simultaneous assays improve efficiency
 of automated analysers and reduce costs, and can be performed in a single
 reaction medium or transfer tube.
 Dwg.0/9
 FS CPI EPI
 FA AB; GI; DCN
 MC CPI: B04-B04C1; B04-E01; B04-G01; B06-D11; B11-C07A; B12-K04A; D05-H09;
 D05-H18B; E06-D11; E06-D18; E11-Q03L; J04-B01
 EPI: S03-E14H
 ABEQ US 5395752 A UPAB: 19950425
 Detecting and/or quantifying at least 2 substances in a test sample
 comprises (a) providing at least 2 different **chemiluminescent**
 cpds. and (b) simultaneously detecting the emission signals of the
chemiluminescent cpds. to detect or quantify the test substances.
 At least 1 cpd. includes a linear aromatic 4-ring fused **acridinium**
 cpd. and another cpd. includes an angular aromatic 4-ring fused or 3-ring
acridinium cpd. Each cpd. has conjugated to it a molecule specific
 for a test substance in the sample so that a reaction is effected between
 the conjugated molecule and test substance.
 Pref., the method is an immunoassay, hybridisation assay or nucleic
 acid amplification assay. At least 1 **chemiluminescent** cpd.

includes an N-alkylated **benzacridinium** 4-ring system.

USE - Used to detect cancer, infectious diseases, genetic abnormalities, disposition and assessment and to monitor medical therapy.
Dwg.0/9

ABEQ US 5702887 A UPAB: 19980216

Detection and/or quantitation of at least 2 substances (I) comprises simultaneously detecting the spectral emission signals from at least 2 different **chemiluminescent** cpds. (II), each associated with a (I). Also new are (1) method for amplifying target sequences (TS); (2) (II) which upon chemical treatment, emit blue-green, green, yellow, orange or red-orange light; (3) test kits for detecting (I) contg. at least 2 (II) conjugated to analyte-specific binding partners; (4) **benzoacridine** derivs. as luminescent cpds. (5) **benzoacridine** derivs. as intermediates of (4); (6) the intermediate 3-methoxyacridine -9-carboxylic acid hydrochloride (III).

USE - The method is useful in industrial and partic. clinical diagnostic assays, partic. immunoassays; homogeneous or heterogeneous hybridisation assays, or amplification assays, for antigens, antibodies or nucleic acid (e.g. oncogenes).

ADVANTAGE - The good sepn. between emissions from different (II) allows a single sample to be used for several tests and emission from all (II) is induced under identical conditions. (II) are stable enough for transport in kit form in aq. soln. Simultaneous assays improve efficiency of automated analysers and reduce costs, and can be performed in a single reaction medium or transfer tube.

Dwg.0/9

L84 ANSWER 6 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 1990-038667 [06] WPIX

CR 1995-373549 [48]

DNN N1990-029792 DNC C1990-016884

TI New **acridinium** ester(s) - encapsulated in liposome vesicles for use as tracers in assays for analyte(s) or for labelling ligands.

DC B02 B04 J04 P73 S03

IN **LAW, S**; PIRAN, U; **LAW, S J**; PIRAN, U S

PA (CIBA) CIBA CORNING DIAGNOSTICS CORP; (CHIR) CHIRON DIAGNOSTICS CORP

CYC 11

PI EP 353971 A 19900207 (199006)* EN 18p

R: BE DE FR GB IT LU NL

AU 8939033 A 19900208 (199015)

JP 02096567 A 19900409 (199020)

AU 634716 B 19930304 (199316)

C07D219-06

AU 9332034 A 19930401 (199320)

G01N033-532

US 5227489 A 19930713 (199329)

13p

C07D219-04

AU 654754 B 19941117 (199502)

G01N033-532

US 5449556 A 19950912 (199542)

15p

B32B009-02

EP 353971 B1 19960207 (199610) EN 19p

C07D219-04

R: BE DE FR GB IT LU NL

DE 68925603 E 19960321 (199617)

C07D219-04

US 5595875 A 19970121 (199710)

14p

C12Q001-68

<--

JP 09025422 A 19970128 (199714)

13p

C09B015-00

JP 2601347 B2 19970416 (199720)

15p

C07D219-04

US 5656500 A 19970812 (199738)

13p

G01N033-533

CA 1339490 C 19971007 (199801)

C07D219-04

JP 2822320 B2 19981111 (199850)

15p

C09B015-00

ADT EP 353971 A EP 1989-307752 19890731; JP 02096567 A JP 1989-199178

19890731; AU 634716 B AU 1989-39033 19890727; AU 9332034 A AU 1993-32034

19930127, Div ex AU 1989-39033

; US 5227489 A Cont of US

1988-226639 19880801, US 1992-826186 19920122; AU 654754 B AU 1993-32034

19930127, Div ex AU 1989-39033

; US 5449556 A Cont of US

1988-226639 19880801, Div ex US 1992-826186 19920122, US 1993-32231

19930317; EP 353971 B1 EP 1989-307752 19890731; DE 68925603 E DE

1989-625603 19890731, EP 1989-307752 19890731; US 5595875 A Cont of US

1988-226639 19880801, Div ex US 1992-826186 19920122, Div ex US 1993-32231 19930317, US 1994-325845 19941019; JP 09025422 A Div ex JP 1989-199178 19890731, JP 1996-179488 19890731; JP 2601347 B2 JP 1989-199178 19890731; US 5656500 A Cont of US 1988-226639 19880801, Div ex US 1992-826186 19920122, Div ex US 1993-32321 19930317, Cont of US 1994-325845 19941019, US 1995-440427 19950512; CA 1339490 C CA 1989-607098 19890731; JP 2822320 B2 Div ex JP 1989-199178 19890731, JP 1996-179488 19890731

FDT AU 634716 B Previous Publ. AU 8939033; AU 654754 B Previous Publ. AU 9332034; US 5449556 A Div ex US 5227489; DE 68925603 E Based on EP 353971; US 5595875 A Div ex US 5227489, Div ex US 5449556; JP 2601347 B2 Previous Publ. JP 02096567; US 5656500 A Div ex US 5227489, Div ex US 5449556, Cont of US 5595875; JP 2822320 B2 Previous Publ. JP 09025422

PRAI US 1988-226639 19880801; US 1992-826186 19920122; US 1993-32231 19930317; US 1994-325845 19941019; US 1993-32321 19930317; US 1995-440427 19950512

REP A3...9041; EP 257541; EP 263657; EP 82636; GB 1461877; No-SR.Pub

IC ICM B32B009-02; C07D219-04; C07D219-06; C09B015-00; **C12Q001-68**; G01N033-532; G01N033-533

ICS C07F009-09; C07F009-38; C07F009-64; C07K015-12; C07K017-02; C09K011-07; G01N033-53; G01N033-544; G01N033-549; G01N033-554; G01N033-573; G01N033-58; G01N033-78

ICA C09K011-06; G01N021-76

AB EP 353971 A UPAB: 19970926

A luminosome is claimed characterised in that it comprises a liposome encapsulating an **acridinium** ester (I). Pref. (I) is of formula (Ia) (R1 = alkyl, alkenyl, alkynyl, aryl or aralkyl which may contain one or more heteratoms; R2,R3,R5,R7 = H, amino, alkoxy, OH, CO2, halide, NO2, CN, SO3, NHC(O)R, C(O)R, C(O)OR, C(O)NHR or SCN; R = as for R1; R4, R8 = H, alkyl, alkenyl, alkynyl, aralkyl or alkoxy; R6 = COOH, -R-In or Q=R-In; Q = O, S, NH, CO, SO3, diazo, NHC(S)NH, NHC(O)NH, NHC(O)O, NHC(O), C(O)NH or NHC(N+H2); I an ionisable gp.; n = an integer at least 1; x = an anion. Also claimed are the acridinium esters of formula (Ia).

USE/ADVANTAGE - The acridinium esters have high solubility and are useful as **chemiluminescent** markers and may be encapsulated at high concns. within liposome vesicles without leakages of the esters from the vesicles. The lumisomes can be used as tracers in assays for analytes eg. antibodies, antigens or nucleic acids. The **acridinium** esters can also be used for labelling ligands, analytes, specific binding partners or nucleic acids.

Dwg.0/0

FS CPI EPI GMPI

FA AB; GI; DCN

MC CPI: B04-B04A1; B04-B04C; B06-D11; B11-C07A5; **B11-C07B4**; B12-K04; B12-M11F; J04-B01B

EPI: S03-E14H4

ABEQ US 5227489 A UPAB: 19931116

Acridinium esters of formula (I) are new. In (I), R1 is CH2A; A is H, alkyl, alkenyl, alkynyl, aryl or aralkyl; R1 has up to 24C atoms and up to 20 heteratoms eg. N, O, P or S. R2, R3, R5, R7 are H, NH2, alkoxy, OH, COOH, halo, NO2, CN, SO3H, NHCOR, COR, COOR, CONHR or SCN; R= as R1, R4, R8 1-8C straight chain alkyl, alkenyl, alkynyl, aralkyl or alkoxy with side chains having upto 2 C atoms. X is an anion; R6 is R-(I)n or QR-(I)n; Q=CO, diazo, NHCSNH, NHCONH, NHCOO, NHCO, CONH, NHC(+NH2)-, O, S, NH or SO3; I is SO3H, OSO3H, OP(OH)2 or OPO(OH)2 and n=1-4. USE/ADVANTAGE - Used for liposome encapsulation to detect an analyte in a fluid. Can be encapsulated without significant leakage.

Dwg.1/5

ABEQ US 5449556 A UPAB: 19951026

Lumisome comprises hydrophilic **acridinium** ester of formula (I). R1 = 1-24C alkyl, alkoyl, alkynyl, and or aralkyl having up to 20 N,O,P in S heteratoms R2,R3,R5 and R7 = H, amino, alkoxy hydroxyl, -COOH, halide, nitro -CN, -SO3H, -NHCOR, -COR, -COOR, -CONHR or -SCN (R = R1). R4,R8 = alkyl, alkenyl, alkynyl, aralkyl, or alkoxy having up to 8C with no

branching. No side chains within R4 and R8 have more than 2C. X = anion, R6 = -R-Y(n) or -Q-P-Y(n) Q = -O-, -S-, -NH; -CO-, -SO3- diazo, -NHC(=S)NH, -NHCONH-, -NHCOO-, NHCO-, -CONH-, or -NHC(=NH2+)- Y = SO3H, -OSO3H, -PO(OH)2 or PO(OH2), n = 1-4.

USE - (I) are useful for detecting analyte in a fluid sample, and as **chemiluminesced** marks whcih can be encapsulated with liposome vesicles without linkage of the esters.

Dwg.0/5

ABEQ EP 353971 B UPAB: 19960308

A liposome characterised in that it comprises an **acridinium** ester encapsulated therein.

Dwg.0/5

ABEQ US 5595875 A UPAB: 19970307

In an assay for the determ. of an analyte where the assay comprises combining a sample fluid suspected of contg. the analyte with liposomes comprising a label and a ligand, ligand analogue or anti-ligand and then determining the amt. of the label associated with the analyte, the improvement comprising employing lumisomes as the liposomes, said lumisomes contg. **acridinium** esters of formula (I):

R1 = alkyl, alkenyl, alkynyl, aryl, or aralkyl contg. 0-20 heteroatoms;

R2, R3, R5, R7 = H, amino, alkoxy, hydroxy, halide, nitro, CN, SO3H, NHCRO, OCR, OCOR, OCNHR, SCN;

R = alkyl, alkenyl, alkynyl, aryl, or aralkyl, contg. 0-20 heteratoms;

R4, R8 = alkyl, alkenyl, alkynyl, aralkyl, or alkoxy;

X = an anion;

R6 = R-I(n) or Q-R-I(n),

Q = O, S, NH, OC, SO3, diazo, NHSCNH, NHOCNH, NHOCO, NHOC, OCNH or NHC+NH2;

I = an ionizable gp., and

n = at least 1.

Dwg.0/5

ABEQ US 5656500 A UPAB: 19970922

A luminescent conjugate for use in luminescent assays comprising a lumisome coupled to at least one biological molecule selected from the group consisting of ligands, ligand analogues, anti-ligands, analytes and molecules comprising nucleic acids with said lumisome encapsulating the following **acridinium** ester of formula (I):

wherein:

R1 = alkyl, alkenyl, alkynyl, aryl, or aralkyl, containing 0-20 heteroatoms;

R2, R3, R5, R7 = H, N, alkoxy, hydroxy, halide, nitro, CN, SO3H, NHCOR, COR, CO2R, CORNHR, or SCN;

R = alkyl, alkenyl, alkynyl, aryl, or aralkyl, containing from 0-20 heteroatoms;

R4, R8 = alkyl, alkenyl, alkynyl, aralkyl, or alkoxy;

X = anion;

R6 = -R-I(a) or Q-R-I(a);

Q = O, S, NH, carbonyl, SO3, diazo, NHSCNH, NHCORNH, NHCOR, CORNH, or NHHNH2;

I = an ionizable group;

n = at least 1.

Dwg.0/5

L84 ANSWER 7 OF 7 WPIX (C) 2003 THOMSON DERWENT

AN 1988-100052 [15] WPIX

DNN N1988-075851 DNC C1988-044799

TI New poly-substd. aryl **acridinium** ester(s) - useful as luminescent labels in specific binding assays such as immunoassays or nucleic acid hybridisation assays.

DC B02 B04 J04 S03

IN CHANG, S C S; CUBICCIOTTI, R S; LAW, S J; PALMACCI, S A;
CUBICCIOTT, R S
PA (CIBA) CIBA CORNING DIAGNOSTICS CORP; (CORN-N) CORNING DIAGNOSTICS CORP
CYC 10
PI EP 263657 A 19880413 (198815)* EN 8p
R: BE DE FR GB IT
US 4745181 A 19880517 (198822) 5p
AU 8779100 A 19880414 (198823)
JP 63101368 A 19880506 (198824)
US 4918192 A 19900417 (199020)
EP 263657 B1 19920513 (199220) EN 11p C07D219-04
R: BE DE FR GB IT
US 5110932 A 19920505 (199221) 7p
DE 3779040 G 19920617 (199226) C07D219-04
JP 07002716 B2 19950118 (199507) 7p C07D219-04
ADT EP 263657 A EP 1987-308793 19871005; US 4745181 A US 1986-915527 19861006;
JP 63101368 A JP 1987-252301 19871006; US 4918192 A US 1987-133792
19871214; EP 263657 B1 EP 1987-308793 19871005; US 5110932 A US
1986-915527 19861006; DE 3779040 G DE 1987-3779040 19871005, EP
1987-308793 19871005; JP 07002716 B2 JP 1987-252301 19871006
FDT US 5110932 A Div ex US 4745181, Cont of US 4918192; DE 3779040 G Based on
EP 263657; JP 07002716 B2 Based on JP 63101368
PRAI US 1986-915527 19861006
REP 2.Jnl.Ref; A3...8848; EP 82636; GB 1461877; No-SR.Pub; EP 216553; EP
257541
IC ICM C07D219-04
ICS C07D401-12; C07H005-04; C07H015-12; C07H019-06; C07K015-14;
C09K011-06; C09K011-07; **C12Q001-68**; G01N021-76; G01N021-78;
G01N033-53; G01N033-532; G01N033-533
AB EP 263657 A UPAB: 19930923
A luminescent cpd. comprising a polysubstd. aryl **acridinium**
ester of formula (I) is claimed. In (I), R1 = alkyl, alkenyl, alkynyl or
aryl; R2, R3, R5, R7 = H, amino, carboxyl, OH, alkoxy, NO2 or halide, R4,
R8 = alkyl, alkenyl, alkynyl, aryl, alkoxy, amino, amido, sulphonamido or
sulphide; R6 = -R9-R10; R9 may not be present or is alkyl, or ar(alk)yl;
R10=II-VIII, -COOCOR, . -COX, -COOR, -N=C=S, -N=C=O, N2(+)(-), halide, N3,
-COOH, -OSO2F, -OSO2CF3, -OSO2C4F9, or -NH2; X = CH3SO4, OSO2F, halide,
OSO2CF3, OSO2C4F9 or a gp. (IX); R = alkyl, aryl or aralkyl; R5, R6 and R7
substd. positions on the phenoxy ring are interchangeable.
USE/ADVANTAGE - (I) are useful as luminescent labels in specific
binding assays such as immunoassays or nucleic acid hybridisation assays.
As a result of the substds. on the ortho positions of the phenoxy ring,
the cpds. and luminescent labelled conjugates have better stability in
pH7.4 buffer media, a 3-fold increase in light emitting efficiency when
configured as a conjugate and a 2-fold improvement in the signal-to-noise
ratio when used in a solid phase specific binding assay.
0/1
FS CPI EPI
FA AB; GI; DCN
MC CPI: B04-B04A1; B06-D11; B11-C07A5; B12-K04A; J04-B01
EPI: S03-E14H4
ABEQ DE 3779040 G UPAB: 19930923
A luminescent cpd. comprising a polysubstd. aryl **acridinium**
ester of formula (I) is claimed. In (I), R1 = alkyl, alkenyl, alkynyl or
aryl; R2, R3, R5, R7 = H, amino, carboxyl, OH, alkoxy, NO2 or halide, R4,
R8 = alkyl, alkenyl, alkynyl, aryl, alkoxy, amino, amido, sulphonamido or
sulphide; R6 = -R9-R10; R9 may not be present or is alkyl, or ar(alk)yl;
R10=II-VIII, -COOCOR, . -COX, -COOR, -N=C=S, -N=C=O, N2(+)(-), halide, N3,
-COOH, -OSO2F, -OSO2CF3, -OSO2C4F9, or -NH2; X = CH3SO4, OSO2F, halide,
OSO2CF3, OSO2C4F9 or a gp. (IX); R = alkyl, aryl or aralkyl; R5, R6 and R7
substd. positions on the phenoxy ring are interchangeable.
USE/ADVANTAGE - (I) are useful as luminescent labels in specific
binding assays such as immunoassays or nucleic acid hybridisation assays.

As a result of the substituents on the ortho positions of the phenoxy ring, the cpds. and luminescent labelled conjugates have better stability in pH7.4 buffer media, a 3-fold increase in light emitting efficiency when configured as a conjugate and a 2-fold improvement in the signal-to-noise ratio when used in a solid phase specific binding assay.

ABEQ EP 263657 B UPAB: 19930923

A luminescent compound characterised in that it comprises a polysubstituted aryl **acridinium** ester having structure of formula (I) wherein R1 represents alkyl, alkenyl, alkynyl or aryl; R2, R3, R5 or R7 represents hydrogen, amino carboxyl, hydroxyl, alkoxy, nitro or halide; at least one of R5, R6 or R7 representing -R9 -R10 where R9 is not required, but optionally may represent alkyl, aryl or aralkyl; and R10 is selected from gps. of formulae (II) - (XI) or - N = C = S, - N = C = O, - N2+X, halide, -N3, -COOH-, - OSO2F, -OSO2CF3, -OSO2C4F4, X represents CH3SO4-, OSO2F-, halide, OSO2CF3-, OSO2C4F9-, or gp (XII) R represents alkyl, aryl or aralkyl; and R4 or R8 represents alkyl, alkenyl, alkynyl, aryl, alkoxy, amino, amido, sulfonamido or sulfide.

ABEQ US 4745181 A UPAB: 19930923

Luminescent conjugate comprises a novel polysubst. aryl **acridinium** ester of formula (I). In the formula, R1 is alkyl, alkoxy, alkynyl or aryl; R2, 3, 5 and 7 are H, amino, carboxy, OH, alkoxy, nitro or halo; R4 and 8 are alkyl, alkenyl, alkynyl, aryl, alkoxy, amino, amido, sulphonamido or sulphide; R6' is alkyl, aryl or aralkyl or a direct bond; R6 is CO-X, CO-O-CO-R, COOR, C(OR)=NHX, NCS, NCO, N2.X, halide, N3, COOH, OSO2F, OSO2CF3, OSO2C4F9, NH2, -OSO2-p-C6H4-CH3 or e.g. a gp. of formula (II) or (III), etc. X is CH3SO4, OSO2F, halide, OSO2CF3, OSO2C4F9 or OSO2-p-C6H4-CH3, R is alkyl, aryl or aralkyl. R6'-R6 is covalently coupled to a molecule with biological activity. Positions of R5, R6'-R6 are R7 are interchangeable.

USE/ADVANTAGE - As labels for **chemiluminescent** immunoassays. The conjugate has high stability in pH 7.4 buffer media, three fold increase in light emitting efficiency when configured as the conjugate and two-fold improvement in signal-to-noise ratio.

ABEQ US 4918192 A UPAB: 19930923

Luminescent cpd. comprises a poly-subst. aryl **acridinium** ester of formula (I); in which R1 is alkyl, alkenyl, alkynyl, or aryl; R2, R3, R5 or R7 are H, amino, carboxyl, OH, alkoxy, NO2 or halid; R4 or R8 are alkyl; R6 is R9-R10 in which R9 is not required but; if present, is alkyl, aryl, or aralkyl and R10 is -C(=O)-O-C(=O)-R, -C(=O)-OR, -C(=NH2+X-)-OR, -N=C=S, -N=C=O, -N2+X-, a halide, -N3, -C(=O)-OH, -OSO2F, -OSO2CF3, -OSO2C4H9, -NH2, or a gp. of formula II to VII X is CH3SO4-, OSO2F-, a halide, OSO2CF3-, OSO2C4F9- or a gp. of formula VIII. R is alkyl, aryl or aralkyl; and R5, R6 and R7 substituent positions on the phenoxy ring are interchangeable.

USE/ADVANTAGE - Cpds. (I) are stable labels for **chemiluminescent** immune assay.

ABEQ US 5110932 A UPAB: 19930923

9-(Phenoxycarbonyl)**acridinium** salts of formula (I) are new. In (I), R1 is alkyl, alkenyl, alkynyl or aryl; R2, R3, R5 and R7 are each H, NH2, COOH, OH, alkoxy, NO2 or halogen; R4 and R8 are each alkoxy; R6 is -AR, where A is alkylene, arylene or arylalkylene and R is an ester gp., NCO, NCS, -(N2)+X-, halogen, azide, COOH, OSO2F, OSO2CF3, NH2, etc; and X- is halide, methosulphate, OSO2F, etc.

USE - Cpds. (I) are chemoluminescent markers for labelling antigens, antibodies, enzymes or enzyme substrates, etc., for immunoanalysis.

=> fil dpci

FILE 'DPCI' ENTERED AT 15:36:31 ON 16 FEB 2003
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FILE LAST UPDATED: 5 FEB 2003 <20030205/UP>
PATENTS CITATION INDEX, COVERS 1973 TO DATE

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L85 ANSWER 1 OF 1 DPCI (C) 2003 THOMSON DERWENT
 AN 2001-182973 [18] DPCI
 DNC C2001-054654
 TI New chemiluminescent substrates of hydrolytic enzymes comprising e.g. acridinium compounds, useful in qualitative and quantitative detection of hydrolases in diagnostic assays e.g. immunoassays, nucleic acid assays or receptor assays.
 DC B04 D16 E11 E13
 IN JIANG, Q; LAW, S; NATRAJAN, A; SHARPE, D J; WONG, W
 PA (FARB) BAYER CORP
 CYC 95
 PI WO 2001009372 A1 20010208 (200118)* EN 119p C12Q001-42
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
 NL OA PT SD SE SL SZ TZ UG ZW
 W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
 DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
 LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
 SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
 AU 2000063819 A 20010219 (200129) C12Q001-42
 EP 1203091 A1 20020508 (200238) EN C12Q001-42
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI
 ADT WO 2001009372 A1 WO 2000-US20429 20000727; AU 2000063819 A AU 2000-63819
 20000727; EP 1203091 A1 EP 2000-950764 20000727, WO 2000-US20429 20000727
 FDT AU 2000063819 A Based on WO 200109372; EP 1203091 A1 Based on WO 200109372
 PRAI **US 1999-146648P 19990730**
 IC ICM C12Q001-42
 ICS C07D219-06
 FS CPI

CTCS CITATION COUNTERS

PNC.DI	0	Cited Patents Count (by inventor)
PNC.DX	6	Cited Patents Count (by examiner)
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PNC.GI	0	Citing Patents Count (by inventor)
PNC.GX	0	Citing Patents Count (by examiner)
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IAC.GX	0	Citing Issuing Authority Count (by examiner)
CRC.I	0	Cited Literature References Count (by inventor)
CRC.X	1	Cited Literature References Count (by examiner)

CDP CITED PATENTS UPD: 20020624

Cited by Examiner

CITING PATENT	CAT	CITED PATENT	ACCNO
WO 200109372	A	US 4745181	A 1988-100052/15
	PA:	(CIBA) CIBA CORNING DIAGNOSTICS CORP; (CORN-N) CORNING DIAGNOSTICS CORP	
	IN:	CHANG, S C S; CUBICCIOTTI, R S; LAW, S J; PALMACCI, S	

A; CUBICCIOTT, R S
 Y US 4810636 A 1988-162989/24
 PA: (MILE) MILES INC
 IN: COREY, P F
 Y US 5656426 A 1995-373549/48
 PA: (CIBA) CIBA CORNING DIAGNOSTICS CORP; (CHIR) CHIRON
 DIAGNOSTICS CORP
 IN: CONNOLLY, P B; JIANG, Q; KILROY, J P; LAW, S;
 MCCUDDEN, C R; NATRAJAN, A; SOTIRIOU-LEVENTIS, C;
 TIRRELL, S M; CONNOLLY, P B
 US 5772926 A 1998-386914/33
 PA: (LUMI-N) LUMIGEN INC
 IN: AKHAVAN-TAFTI, H
 WO 9402486 A 1994-048772/06
 PA: (BEHW) BEHRINGWERKE AG; (SYNT) SYNTEx USA INC;
 (DADE-N) DADE BEHRING MARBURG GMBH
 IN: MENEHINE, F; SINGH, R; SINGH, S; ULLMAN, E F;
 MENEHINI, F
 WO 200009487 A1 2000-224255/19
 PA: (FARB) BAYER CORP
 IN: JIANG, Q; LAW, S; NATRAJAN, A; SHARPE, D

REN LITERATURE CITATIONS UPR: 20020624

Citations by Examiner

CITING PATENT	CAT	CITED LITERATURE
WO 200109372	A	RENAULT, JEAN; GIORGI-RENAULT, SYLVIANE; MAILLIET, PATRICK; BARON, MICHEL; PAOLETTI, CLAUDE; CROS, SUZANNE: "Heterocycles a fonction quinone. I. Acridinediones-1,4 a action antitumorale potentielle" EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY - CHIMICA THERAPEUTICA, vol. 16, no. 1, January 1981 (1981-01) - February 1981 (1981-02), pages 24-34, XP002155669

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L87 ANSWER 1 OF 3 WPIX (C) 2003 THOMSON DERWENT

AN 1998-386914 [33] WPIX

CR 1999-034145 [03]

DNC C1998-116893

TI Generation of chemiluminescence - by reacting dihydroxyaromatic and heterocyclic enol phosphate in the presence of oxygen; useful in assays of hydrolytic enzymes and inhibitors.

DC B02 B04 D16

IN AKHAVAN-TAFTI, H

PA (LUMI-N) LUMIGEN INC

CYC 1

PI US 5772926 A 19980630 (199833)* 32p C09K003-00 <--

ADT US 5772926 A US 1997-855421 19970513

PRAI US 1997-855421 19970513

IC ICM C09K003-00

ICS C12Q001-00

AB US 5772926 A UPAB: 19990122

Generation of chemiluminescence comprises reacting, in the presence of oxygen: (a) dihydroxyaromatic compound that comprises 1-5 carbocyclic aromatic rings and is substituted with two hydroxy groups separated by an even number of ring C atoms; and (b) heterocyclic enol phosphate of formula (I): R10, R19 = organic group containing up to 50 non-H atoms chosen from C, N, O, S, P and halo; R11-R18 = H, optionally substituted alkyl, optionally substituted aryl, optionally substituted aralkyl, alkenyl, alkynyl, alkoxy, aryloxy, halo, optionally substituted amino, carboxyl, carboalkoxy, carboxamide, cyano and sulphonate, or pairs of adjacent groups may complete a benzo-fused ring; Z = O or S; M = H or cationic centre; and n = number satisfying electroneutrality, provided that any of R11-R18 or a substituent on R10-R19 may be -A-Q; A = spacer group chosen from 1-10C alkylene or 2-10C oxyalkylene; Q = linking group capable of forming a covalent bond chosen from H, diazo, NCO, NCS, CHO, acid anhydride, oxiranyl, succinimidoxycarbonyl, maleimide, cyano, triazole, tetrazole, hydroxyl, COOH, thiol, or primary or secondary amino.

USE - The method is used to generate chemiluminescence, optionally in the presence of a hydrolytic enzyme and to conduct assays of analytes (claimed). The method is useful in assays of hydrolytic enzymes and enzyme inhibitors and in assays employing labelled specific binding pairs including immunoassays and nucleic acid probe assays. The method may be useful in the detection of hydrolytic enzymes such as alkaline phosphatase and beta -galactosidase, when used as markers or labels in enzyme-linked assays for biological molecules and other analytes such as drugs, hormones, steroids and cancer markers, and when used diagnostically in human and veterinary medicine. They may also be useful in chemical light sources and in detecting compounds in samples in biomedical analysis, food analysis and environmental analysis of pollutants.

ADVANTAGE - Chemiluminescent detection provides a safe, convenient and sensitive means to provide a quantitative measure of the amount of enzyme in a sample or of the amount of an enzyme labelled analyte or labelled specific bind partner for an analyte. Methods are sensitive without requiring additional enzymes or auxiliary reagents in addition to

the enzyme substrate.

Dwg.0/8

FS CPI

FA AB; GI; DCN

MC CPI: B04-L01; B05-B01M; B10-B01A; B10-B02A; B10-B03; B10-D01; B10-E02;
B11-C07B4; B11-C08E3; B12-K04; D05-H09

L87 ANSWER 2 OF 3 WPIX (C) 2003 THOMSON DERWENT

AN 1994-048772 [06] WPIX

DNN N1994-038361 DNC C1994-022060

TI New chemiluminescent cpds. - comprising spiro acridine derivs. or related
cpds. useful as labels in specific binding assays..

DC B02 B04 S03

IN MENEGHINE, F; SINGH, R; SINGH, S; ULLMAN, E F; MENEGHINI, F

PA (BEHW) BEHRINGWERKE AG; (SYNT) SYNTEX USA INC; (DADE-N) DADE BEHRING
MARBURG GMBH

CYC 20

PI WO 9402486 A1 19940203 (199406)* 56p C07D498-10 <--

RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

W: CA JP

EP 651752 A1 19950510 (199523) EN C07D498-10

R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

JP 07509245 W 19951012 (199549) 19p C07D471-20

US 5545834 A 19960813 (199638) 25p C07D498-10

US 5672478 A 19970930 (199745) 26p C12Q001-68

US 5936070 A 19990810 (199938) G01N033-531

US 6002000 A 19991214 (200005) C07D498-10

ADT WO 9402486 A1 WO 1993-US6636 19930719; EP 651752 A1 EP 1993-917182
19930719, WO 1993-US6636 19930719; JP 07509245 W WO 1993-US6636 19930719,
JP 1994-504547 19930719; US 5545834 A Cont of US 1992-916453 19920720, US
1995-373678 19950117; US 5672478 A Cont of US 1992-916453 19920720, Div ex
US 1995-373678 19950117, US 1996-661846 19960611; US 5936070 A Cont of US
1992-916453 19920720, Div ex US 1995-373678 19950117, US 1996-664269
19960611; US 6002000 A Cont of US 1992-916453 19920720, Div ex US
1995-373678 19950117, US 1996-661849 19960611

FDT EP 651752 A1 Based on WO 9402486; JP 07509245 W Based on WO 9402486; US
5672478 A Div ex US 5545834; US 5936070 A Div ex US 5545834; US 6002000 A
Div ex US 5545834

PRAI US 1992-916453 19920720; US 1995-373678 19950117; US 1996-661846
19960611; US 1996-664269 19960611; US 1996-661849 19960611

REP EP 322926

IC ICM C07D471-20; C07D498-10; C12Q001-68; G01N033-531

ICS C07D471-10; C07D491-10; C07D491-113; C07D513-10; C07D517-10;
C07H021-04; C09K011-06; C12M001-00; G01N021-78; G01N033-566;
G01N033-576; G01N033-58; G01N033-76

ICI C07D221:00, C07D265:00, C07D498-10; C07D221:00, C07D319:00, C07D491-10;
C07D221:00, C07D241:00, C07D471-10; C07D221:00, C07D265:00,
C07D498-10; C07D221:00, C07D319:00, C07D491-10; C07D221:00,
C07D241:00, C07D471-10

AB WO 9402486 A UPAB: 19960315

Chemiluminescent cpds. of formula (I) are new, X, Y = O, S, Se or NH; Z = a
chain of 1-5 atoms 0-8 H atoms in (I) may be replaced by gps. comprising
1-50 atoms other than H; 0-4 of the aromatic C atoms in (I) may be
replaced by N; 0-1 H atoms in (I) may be replaced by an organic radical. \$

Also claimed are conjugates of formula A-L-Q (II), where A = a cpd.
(I), L = a linking gp. and Q = H or an sbp member (sbp = specific binding
pair). \$

Also claimed is a method for determining an analyte, comprising: (a)
combining a test sample with a labelled reagent comprising a 1st sbp
member associated with a cpd. (I), where the 1st sbp member is capable of
binding to the analyte or to a 2nd sbp member capable of binding to the
analyte; (b) chemically activating the cpd. (I); and (c) detecting the
amt. of luminescence generated. \$

USE - The method may be used to determine e.g. proteins, nucleic acids and polysaccharides.

Dwg.1/5

Dwg.1/5

FS CPI EPI

FA AB; GI

MC CPI: B04-C02; B04-E01; B04-N02; B05-B01D; B05-C08; B06-D11; B11-C07B4;

B12-K04A

EPI: S03-E04E; S03-E14H; S03-E14H5

ABEQ US 5545834 A UPAB: 19960924

A compound of the formula (I):

wherein: X is NH and Y is independently selected from the group consisting of O and S; and Z is a chain, 2 atoms in length, which atoms are part of a benzene ring; where 0 to 8 hydrogens of said compound may be replaced by a W where each W is an alkyl, alkylidene, aryl, aralkyl, or an alkyl, aryl or aralkyl substituted with one or more radicals of functional groups, wherein said functional groups are independently selected from the group consisting of carboxylic acids, alcohols, thiols, carboxamides, carbamates, carboxylic acid esters, sulphonic acids, sulphonic acid esters, phosphoric acids, phosphoric acid esters, ureas, phosphoramides, sulphonamides, ethers, sulphides, thioethers, olefins, acetylenes, amines, ketones, aldehydes, nitriles, and halogens.

Dwg.0/5

ABEQ US 5672478 A UPAB: 19971113

Method for determining an analyte comprises: (a) combining in a liquid medium: (1) a sample suspected of containing the analyte, (2) a chemiluminescent compound having the formula (I):

X' and Y' = O, S, Se, NH, NR', NSO₂R' and NCOR', where R' = alkyl, aryl and halogenated alkyl; Z' = a 1-2 C atoms which link X' and Y'; one or more H of Y' and Z' may be replaced by organic radicals which may be taken together to form rings or double bonds; and (3) chemical means for chemically activating the chemiluminescent compound to produce luminescence; and (b) detecting the amount of luminescence generated by the chemiluminescent compound, the amount of it being related to the amount of analyte in the sample.

Dwg.0/5

L87 ANSWER 3 OF 3 WPIX (C) 2003 THOMSON DERWENT

AN 1988-162989 [24] WPIX

CR 1991-355818 [49]

DNC C1988-072584

TI Chromogenic acridinone enzyme substrates - having gp. cleaved by specific enzyme to give chromogen having greater absorbance max..

DC B02 B04 D16

IN COREY, P F

PA (MILE) MILES INC

CYC 22

PI EP 270946 A 19880615 (198824)* EN 70p

R: AT BE CH DE ES FR GB IT LI LU NL SE

AU 8782060 A 19880609 (198831)

NO 8705008 A 19880704 (198832)

DK 8706438 A 19880610 (198834)

ZA 8709223 A 19880609 (198840)

US 4810636 A 19890307 (198912) 22p

JP 01131192 A 19890524 (198927)

EP 270946 B1 19920513 (199220) EN 31p C07D219-06

R: AT BE CH DE ES FR GB IT LI LU NL SE

IL 84666 A 19920216 (199220) C07H017-02

DE 3779066 G 19920617 (199226) C07D219-06

CA 1303611 C 19920616 (199230) FR C07D219-06

ES 2039225 T3 19930916 (199342) C07D219-06

NO 175308 B 19940620 (199428) C07D219-06

JP 06062569 B2 19940817 (199431) 23p C07D219-06

<--

ADT EP 270946 A EP 1987-117548 19871127; ZA 8709223 A ZA 1987-9223 19871208;
US 4810636 A US 1987-123537 19871120; JP 01131192 A JP 1987-308813
19871208; EP 270946 B1 EP 1991-113550 ; IL 84666 A IL 1987-84666
19871201; DE 3779066 G DE 1987-3779066 19871127, EP 1987-117548 19871127;
CA 1303611 C CA 1987-552712 19871125; ES 2039225 T3 EP 1987-117548
19871127; NO 175308 B NO 1987-5008 19871201; JP 06062569 B2 JP 1987-308813
19871208

FDT DE 3779066 G Based on EP 270946; ES 2039225 T3 Based on EP 270946; NO
175308 B Previous Publ. NO 8705008; JP 06062569 B2 Based on JP 01131192 .

PRAI US 1986-939855 19861209; US 1987-123537 19871120

REP 2.Jnl.Ref; A3...8839; EP 156347; EP 157384; No-SR.Pub; US 3378463

IC ICM C07D219-06; C07H017-02

ICS C07D211-20; C07D221-20; C07F009-64; C07H015-26; C08B037-00;
C12Q001-34; C12Q001-54; G01N033-573

AB EP 270946 A UPAB: 19940907

A chromogenic enzyme substrate cpd. of formula (I) or (II) is new. Y = an enzymatically-cleavable gp.; R, R1 = alkyl or aryl or together form a cyclohexadienone or hydroxycyclohexyl residue; more specifically, the enzymatically-cleavable gp. is a radical of a cpd. Y-OH comprising an enzyme-specific moiety selected from sugars (e.g. alpha-D-galactose) and derivs., aliphatic and aromatic carboxylic acid gps., phosphoric acid and sulphuric acid.

Also claimed is an acridinone chromagen of formula (III) or (IV), where R R1 = alkyl or aryl; X = halo.

USE/ADVANTAGE - When the enzymatically-cleavable gp. Y is cleaved by a specific enzyme in a basic soln., a deprotonated form of the chromagen is liberated having an absorbance maximum which is greater than the substrate cpd. The distinct change in absorbance provides a readily observable and detectable optical signal which can be accurately measured and correlated to the amt. of enzyme present in a liquid test sample.

Dwg.0/4

Dwg.0/4

FS CPI

FA AB; DCN

MC CPI: B04-B02C; B05-B01M; B06-D11; B11-C07B2; B12-K04A; D05-A02; D05-H09

ABEQ DE 3779066 G UPAB: 19930923

A chromogenic enzyme substrate cpd. of formula (I) or (II) is new. Y = an enzymatically-cleavable gp.; R, R1 = alkyl or aryl or together form a cyclohexadienone or hydroxycyclohexyl residue; more specifically, the enzymatically-cleavable gp. is a radical of a cpd. Y-OH comprising an enzyme-specific moiety selected from sugars (e.g. alpha-D-galactose) and derivs., aliphatic and aromatic carboxylic acid gps., phosphoric acid and sulphuric acid.

Also claimed is an acridinone chromagen of formula (III) or (IV), where R R1 = alkyl or aryl; X = halo.

USE/ADVANTAGE - When the enzymatically-cleavable gp. Y is cleaved by a specific enzyme in a basic soln., a deprotonated form of the chromagen is liberated having an absorbance maximum which is greater than the substrate cpd. The distinct change in absorbance provides a readily observable and detectable optical signal which can be accurately measured and correlated to the amt. of enzyme present in a liquid test sample.

ABEQ EP 270946 B UPAB: 19930923

A chromogenic enzyme substrate compound characterised by the formula (I) or (II) wherein Y represents an enzymatically-cleavable radical of a compound Y-OH comprising a sugar or a sugar derivative or a phosphate group, and R and R1, which can be the same or different, are alkyl containing from 1 to 6 carbon atoms, phenyl, naphthyl or together form a cyclohexa-2,5-diene-4-one or 4-hydroxycyclohexyl residue.

ABEQ US 4810636 A UPAB: 19930923

Novel chromogenic enzyme substrate cpd. has formula (I) or (II), where Y is an enzymatically-cleavable gp.; and R and R' are each alkyl or aryl, or together form a cyclohexadienone or Enzymatically-cleavable gp. comprises Y-OH which is an enzyme-specific sugar deriv. e.g alpha-D-galactose,

beta-D-galactose, alpha-D-glucose, beta-D-glucose, alpha-D-mannose, N-acetylglucosamine, or N-acetylneuraminic acid.

USE/ADVANTAGE - Liberated chromogen has absorbence max. in basic soln. more than that of acridinone, enabling accurate measurement and correlation to amt. of enzyme in liq. test sample.

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          E JIANG Q/AU
L2      223 S E3-E14
          E JIANG QING/AU
L3      152 S E3,E8
L4      31 S E29
          E NATRAJAN A/AU
L5      21 S E3,E4
          E SHARPE D/AU
L6      8 S E3,E7
L7      7 S E15,E19
          E WONG W/AU
L8      433 S E3-E38
          E WONG WEN/AU
L9      1 S E7
          E LAW S/AU
L10     25 S E3,E13
L11     38 S E30
L12     6 S L1 AND L2-L11
          E CHEMILUMINES/CT
          E E4+ALL
          E E2+ALL
L13     7747 S E5,E4+NT
          E E3+ALL
L14     196317 S E3+NT
L15     36 S L2-L11 AND L13,L14
L16     329 S L13 AND ENZYM?/SC,SX,CW
L17     2 S L15 AND L16
L18     46 S LUMI (S) (M OR P)
L19     1 S L18 AND ENZYM?/SC,SX,CW,BI
L20     1 S L18 AND (BIOCHEM?(L)METHOD?)/SC,SX
L21     2 S L17,L19,L20
L22     2 S L12 AND L21
L23     4 S L12 NOT L22
L24     5 S L13 AND L15
L25     2 S L24 AND L23
L26     7 S L22-L25,L12 AND L1-L25
L27     6 S L26 AND ?LUMINESC?
L28     1 S L26 NOT L27
L29     6 S L27 AND L1-L27
L30     26267 S L13 OR CHEMILUMINESC?
L31     3464 S L30 AND ENZYM?/SC,SX,CW,BI
L32     17 S L31 AND HYDROLYT?
          SEL DN AN 1 5 14 15
L33     13 S L32 NOT E1-E12
          SEL DN AN L32 15
L34     1 S E13-E15
L35     19 S L33,L34,L29 AND L1-L34
L36     11 S L35 AND LIGHT

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L37 19 S L35,L36
 L38 1383 S L31 AND (BIOCHEM?(L)METHOD?)/SC,SX
 L39 23 S L38 AND BINDING PAIR
 L40 228 S L38 AND (LIGHT OR WAVELENGTH)
 L41 185 S L38 AND ?COMPLEX?
 L42 37 S L40 AND L39,L41
 L43 50 S L37,L42
 L44 10 S L39 NOT L43
 SEL DN AN 1-3 6-10
 L45 2 S L44 NOT E16-E39
 L46 44 S L43,L45 AND (PD<=19990730 OR PRD<=19990730 OR AD<=19990730)
 L47 46 S L29,L46
 L48 40 S L47 NOT L2-L11
 SEL DN AN 6 8 10 12 19 20 21 25 26 27 28 29 30 32 34 36 40
 L49 23 S L48 NOT E40-E90
 L50 14 S L49 AND BIND?
 L51 13 S L50 NOT ARRAY/TI
 L52 19 S L29,L51
 L53 10 S L49 NOT L52
 SEL DN AN 3 5 7 9
 L54 4 S L53 AND E91-E102
 L55 23 S L52,L54 AND L1-L54
 L56 16 S L55 AND (PAIR? OR PARTNER?)
 L57 3 S L55 AND DUAL?
 L58 17 S L56,L57
 L59 6 S L55 NOT L58
 L60 3 S L58,L59 AND SUBSTRATE
 L61 23 S L58-L60

FILE 'HCAPLUS' ENTERED AT 15:15:13 ON 16 FEB 2003

FILE 'WPIX' ENTERED AT 15:15:25 ON 16 FEB 2003

E US99-146648/AP,PRN

L62 1 S E5
 L63 43618 S C12Q001/IC,ICM,ICS
 L64 871 S L63 AND (?CHEMILUMINESC? OR ?CHEMI LUMINESC?)/BIX
 L65 1280 S L63 AND (G04-A OR B11-C07B4 OR C11-C07B4 OR S03-E04E)/MC
 L66 1800 S L64,L65
 L67 2 S L66 AND LUMI/BIX
 L68 859 S L66 AND Q505/M0,M1,M2,M3,M4,M5,M6
 L69 1503 S L66 AND Q233/M0,M1,M2,M3,M4,M5,M6
 L70 787 S L68 AND L69
 L71 776 S P831/M0,M1,M2,M3,M4,M5,M6 AND L70
 L72 213 S L71 AND SUBSTRATE/BIX
 L73 4 S L72 AND HYDROLYT?
 L74 4 S L62,L73

FILE 'WPIX' ENTERED AT 15:29:04 ON 16 FEB 2003

E JIANG Q/AU

L75 116 S E3,E4
 E NATRAJAN A/AU
 L76 5 S E3
 E SHARPE D/AU
 L77 11 S E3,E6
 E WONG W/AU
 L78 258 S E3-E33
 E LAW S/AU
 L79 32 S E3,E7
 L80 18 S L75-L79 AND L63-L66
 L81 8 S L80 AND ?ACRIDIN?/BIX
 L82 10 S L80 NOT L81
 L83 11 S L74,L81 AND L62-L82
 L84 7 S L83 NOT L74

FILE 'DPCI' ENTERED AT 15:36:12 ON 16 FEB 2003
E US99-146648/AP, PRN

L85 1 S E5

FILE 'DPCI' ENTERED AT 15:36:31 ON 16 FEB 2003

FILE 'WPIX' ENTERED AT 15:37:37 ON 16 FEB 2003

L86 5 S (US5656426 OR US5772926 OR WO9402486 OR WO20009487 OR US48106

L87 3 S L86 NOT L74, L84

FILE 'WPIX' ENTERED AT 15:38:55 ON 16 FEB 2003

FILE 'HCAPLUS' ENTERED AT 15:39:06 ON 16 FEB 2003

E WO20009487/PN

E WO2000-9487/AP, PRN

E MENEHINE F/AU

L88 1 S E4

SET COST ON